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Summary

Reference	EDC/25/0183
Alternative Reference	PP-14396418
Application Received	Mon 13 Oct 2025
Application Validated	Mon 20 Oct 2025
Address	Ashmere Neighbourhood Green Ashmere Eastern Quarry Watling Street Swanscombe Kent
Proposal	Reserved matters application (relating to access, appearance, landscaping, layout and scale) pursuant to Condition 2 (details of Reserved Matters), Condition 25 (Reserved Matters Design Details), Condition 28 (Noise Report), and Condition 31 (Open Land) of outline planning permission reference EDC/17/0048 for the creation of a Neighbourhood Green (Ashmere Neighbourhood Green South West)
Status	Awaiting decision
Appeal Status	Unknown
Appeal Decision	Not Available

Further Information

Application Type	Reserved Matters
Expected Decision Level	Not Available
Case Officer	Harry Bailey
Parish	Non-Parish Area
Ward	Ebbsfleet
District Reference	Not Available
Applicant Name	Eastern Quarry Ltd
Agent Name	Mr James Dodds

Agent Company Name	CBRE Ltd
Agent Address	Henrietta House Henrietta Place London W1G 0NB United Kingdom
Environmental Assessment Requested	No

Contacts

Agent

Mr James Dodds

Email Address	james.dodds@cbre.com
Phone Number	07768175609

Ward Councillors

Cllr Danny Nicklen

Address	C/o Civic Centre Home Gardens Dartford Kent DA1 1DR

Cllr Victoria Akintomide-Akinwamide

Address	C/o Civic Centre Home Gardens Dartford Kent DA1 1DR

Cllr Jonathon Hawkes

Address	C/o Civic Centre Home Gardens Dartford Kent DA1 1DR

Important Dates

Application Received Date	Mon 13 Oct 2025
Application Validated Date	Mon 20 Oct 2025
Expiry Date	Thu 19 Mar 2026
Actual Committee Date	Not Available
Latest Neighbour Consultation Date	Not Available
Neighbour Consultation Expiry Date	Not Available
Standard Consultation Date	Thu 05 Mar 2026

Standard Consultation Expiry Date	Thu 19 Mar 2026
Last Advertised In Press Date	Thu 30 Oct 2025
Latest Advertisement Expiry Date	Thu 20 Nov 2025
Last Site Notice Posted Date	Wed 22 Oct 2025
Latest Site Notice Expiry Date	Wed 12 Nov 2025
Internal Target Date	Wed 01 Apr 2026
Agreed Expiry Date	Wed 01 Apr 2026
Decision Made Date	Not Available
Permission Expiry Date	Not Available
Decision Printed Date	Not Available
Environmental Impact Assessment Received	Not Available
Determination Deadline	Mon 19 Jan 2026
Temporary Permission Expiry Date	Not Available

Related Information

There are 39 documents associated with this application.

There is 1 case associated with this application.

There is 1 property associated with this application.

Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet
Kent
DA10 1EE
www.ebbsfleetdc.org.uk

Application for Approval of Reserved Matters following Outline Approval

Town and Country Planning (Development Management Procedure) (England) Order 2015 (as amended)

Publication of applications on planning authority websites

Please note that the information provided on this application form and in supporting documents may be published on the Authority's website. If you require any further clarification, please contact the Authority's planning department.

Site Location

Disclaimer: We can only make recommendations based on the answers given in the questions.

If you cannot provide a postcode, the description of site location must be completed. Please provide the most accurate site description you can, to help locate the site - for example "field to the North of the Post Office".

Number

Suffix

Property Name

Ashmere Neighbourhood Green

Address Line 1

Ashmere

Address Line 2

Eastern Quarry

Address Line 3

Watling Street

Town/city

Swanscombe

Postcode

Description of site location must be completed if postcode is not known:

Easting (x)

558900

Northing (y)

173472

Description

Ashmere, Eastern Quarry, Watling Street, Swanscombe, Kent

Applicant Details

Name/Company

Title

First name

Surname

Eastern Quarry Ltd

Company Name

Address

Address line 1

c/o Agent

Address line 2

c/o Agent

Address line 3

c/o Agent

Town/City

County

Country

United Kingdom

Postcode

Are you an agent acting on behalf of the applicant?

- [x] Yes
- [ ] No

Contact Details

Primary number

Secondary number

Fax number

Email address

***** REDACTED ******

Agent Details

Name/Company

Title

Mr

First name

James

Surname

Dodds

Company Name

CBRE Ltd

Address

Address line 1

Henrietta House

Address line 2

Henrietta Place

Address line 3

Town/City

London

County

Country

United Kingdom

Postcode

W1G 0NB

Contact Details

Primary number

***** REDACTED ******

Secondary number

Fax number

Email address

***** REDACTED ******

Development Description

Please indicate all those reserved matters for which approval is being sought:

- [x] Access
- [x] Appearance
- [x] Landscaping
- [x] Layout
- [x] Scale

Please provide a description of the approved development as shown on the decision letter

Application for variation of conditions 3 & 4 attached to planning permission reference no. 12/01451/EQVAR for a mixed use development of up to 6,250 dwellings & up to 231,000 square metres of non-residential floorspace with associated infrastructure and open space; to allow for the substitution of approved parameter plans and documents under condition 3 and revised strategies under condition 4.

Reference number

EDC/17/0048

Date of decision (date must be pre-application submission)

28/03/2018

Please provide a description of the reserved matters for which you are seeking consent. Please state if the outline planning application was an environment impact assessment application and, if so, confirm that an environmental statement was submitted to the planning authority at that time

Please refer to Planning Statement

Has the work already started?

- ○ Yes
- ⊘ No

Supporting Information

Please provide the following information

Please list all relevant drawings, including reference numbers, that were approved as part of the original decision.

Refer to Decision Notice EDC/17/0048

Please list all drawing numbers submitted with this application for approval

Refer to Cover Letter.

If applicable, please state the reasons for any changes to the original drawings

N/A

Site Visit

Can the site be seen from a public road, public footpath, bridleway or other public land?

- [x] Yes
- [ ] No

If the planning authority needs to make an appointment to carry out a site visit, whom should they contact?

- [x] The agent
- [ ] The applicant
- [ ] Other person

Pre-application Advice

Has assistance or prior advice been sought from the local authority about this application?

- [x] Yes
- [ ] No

If Yes, please complete the following information about the advice you were given (this will help the authority to deal with this application more efficiently):

Officer name:

Title

***** REDACTED ******

First Name

***** REDACTED ******

Surname

***** REDACTED ******

Reference

Date (must be pre-application submission)

10/06/2025

Details of the pre-application advice received

Refer to submitted Planning Statement

Authority Employee/Member

With respect to the Authority, is the applicant and/or agent one of the following:
(a) a member of staff
(b) an elected member
(c) related to a member of staff
(d) related to an elected member

It is an important principle of decision-making that the process is open and transparent.

For the purposes of this question, "related to" means related, by birth or otherwise, closely enough that a fair-minded and informed observer, having considered the facts, would conclude that there was bias on the part of the decision-maker in the Local Planning Authority.

Do any of the above statements apply?

◯ Yes
⊘ No

Declaration

I/We hereby apply for Approval of reserved matters as described in the questions answered, details provided, and the accompanying plans/drawings and additional information.
I/We confirm that, to the best of my/our knowledge, any facts stated are true and accurate and any opinions given are the genuine opinions of the person(s) giving them.
I/We also accept that, in accordance with the Planning Portal's terms and conditions:
- Once submitted, this information will be made available to the Local Planning Authority and, once validated by them, be published as part of a public register and on the authority's website;
- Our system will automatically generate and send you emails in regard to the submission of this application.

☑ I / We agree to the outlined declaration

Signed

James Dodds

Date

09/10/2025

CAMLAND CONSULTING
Land · Development · Construction

The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Job No:	B18075	**Date:**	23.09.25
Job Title:	Whitecliffe	**Engineer:**	RDT
Reference:	TN19 Ashmere P10 N'Hood Green Drainage Strategy	**Checked:**	DCT
Location:	Ebbsfleet, Kent	**Sheet No:**	1 of 1

Background:

This Technical Note has been produced to summarise the drainage strategy for the Neighbourhood Green serving Parcel 10 of the Ashmere Village at Whitecliffe (formerly Eastern Quarry), Ebbsfleet and to support a Reserved Matters Planning Application. It should be read in conjunction with the following documents: -

- Whitecliffe Water Management Plan
- Drawing No. B18075/153 P1 Whitecliffe Drainage Strategy Sheet 2
- Drawing No. B18075/305 P1 Ashmere P10 Neighbourhood Green – Proposed Drainage
- Report Ref 173535-04 Ashmere Phase 4 Drainage Technical Note
- Ashmere P10 MG Proposed SW - Surface water drainage calculations

Surface Water Drainage Strategy:

The drainage proposals have been developed to comply with the approved Water Management Plan, and the associated site wide drainage strategy (see drawing no. B18075-153).

It is proposed to drain the Neighbourhood Green via filter drains, linear drains and pipes to the strategic surface water drainage system serving the parcel.

The strategic network is comprised of sewers, swales, and lakes to convey surface water run off to a large attenuation lake, from where run off will be pumped to a new outfall into the river Thames at a rate controlled by a surface water pumping station. Strategic drainage of the parcel is described in more detail in the Ardent drainage technical note ref 173535-04.

Infiltration techniques are not suitable on the site due to the low permeability of the soil and the presence of an underlying principal aquifer.

The Neighbourhood Green will also accommodate an interim foul water pumping station, which is needed to avoid excessively deep strategic foul water sewers, thereby complying with Construction Design and Management Regulations to consider the safety of construction and maintenance personnel in the life of the facility.

The pumping station will be the subject of a 15m cordon sanitaire which will prevent habitable accommodation prevent development that would be adversely affected by smell. The pumps will be electric so noise will be kept to a minimum.

Flood Control

Sewers and swales have been sized such that there will be no flooding for a 1 in 30 year storm event, and any flooding occurring during a 1 in 100 year storm event plus a 20% allowance for climate change will be contained within carriageways below the top of kerb level and channelled away from properties towards the lakes or swales. The effects of an extreme storm event is covered further in the phase 4 drainage technical note. The roads and swales serving the wider development serve as a primary flood route for exceedance events.

The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Water Quality:

Surface water run-off from the neighbourhood green will be drained initially via filter drains which will provide the first part of a treatment train. The swales, both within the park and beyond, and lakes which form part of the strategic drainage network to which the green will eventually drain are also designed to act as part of the treatment train to ensure the surface water run-off from the development is treated to the standard required by the SUDS manual before being discharged to the River Thames.

In addition to the treatment provided by the swales and lakes, further treatment will be provided to run-off with the use of filter drains, and recirculation mains which will take water from the lakes and pump it to the top of the swales to provide additional treatment and a constant flow of water through the swales. The recirculation mains will also encourage flow across the lakes to avoid stagnation of standing water within the lakes.

DARTFORD BOROUGH COUNCIL

Please ask for: Steven Bell
[redacted]

Your Ref: **25/0183**
Our Ref: DA/25/01216/EDCCON
Date: 3rd December 2025

Consultation
C/o Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet Valley
Kent
DA10 1EE

Dear Sir,

Town and Country Planning Act 1990
Consultation on Reserved matters application (relating to access, appearance, landscaping, layout and scale) pursuant to Condition 2 (details of Reserved Matters), Condition 25 (Reserved Matters Design Details), Condition 28 (Noise Report), and Condition 31 (Open Land) of outline planning permission reference EDC/17/0048 for the creation of a Neighbourhood Green (Ashmere Neighbourhood Green South West within Ebbsfleet Development Corporation
Ashmere Neighbourhood Green Ashmere Eastern Quarry Watling Street

I refer to the above application which has now been considered by the Borough Council and wish to thank you for the opportunity to comment thereon.

The Borough Council has no objection to the submitted proposals and consider the detail is a matter for EDC to consider.

Yours faithfully

[redacted]

Head of Planning Services

Define.

LEGEND

Reserved Matters Application Boundary

Bluewater Shopping Centre

B255

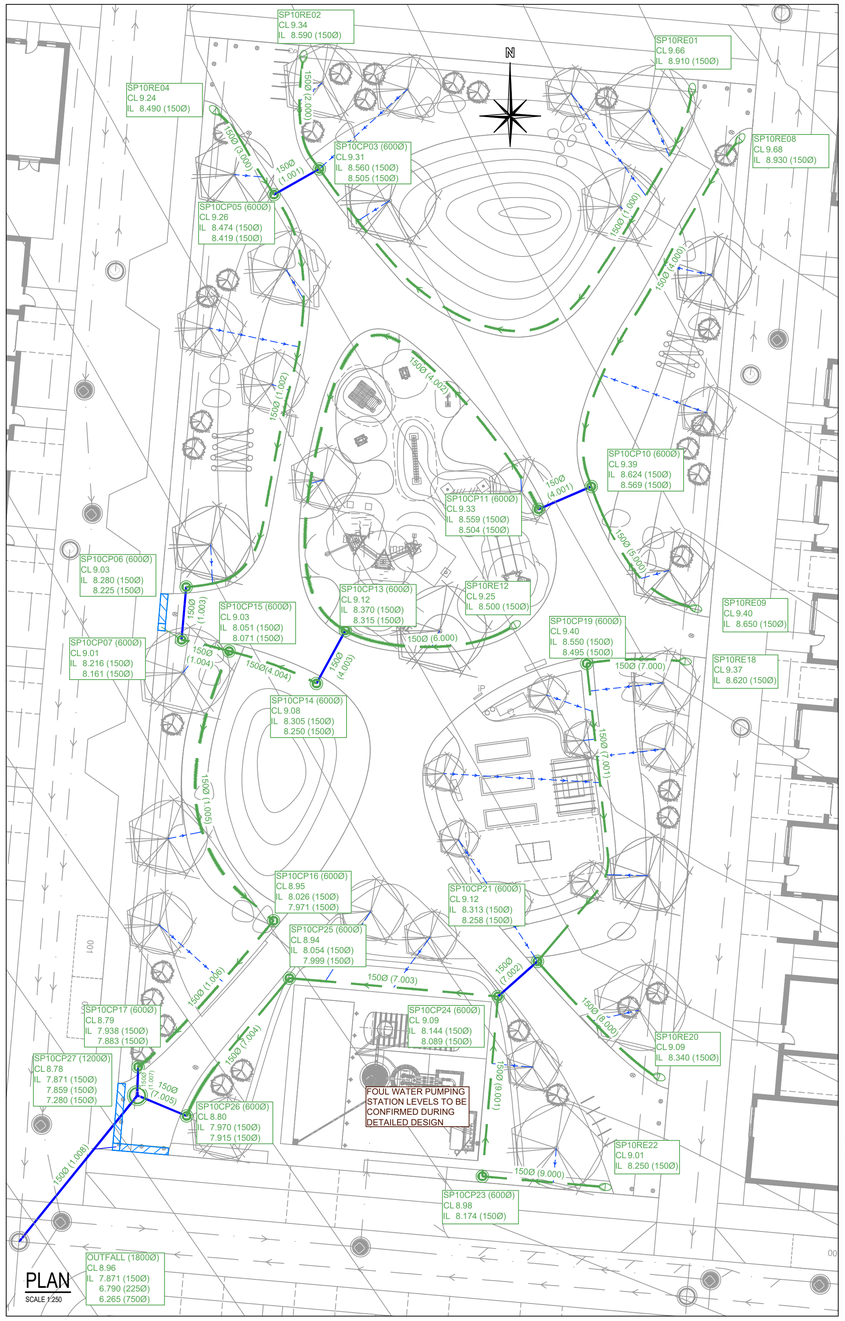
Fastrack

Ashmere Lake

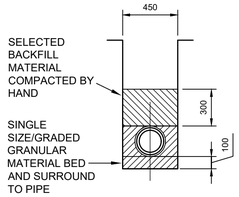
A2 Watling Street

Scale 1:1500

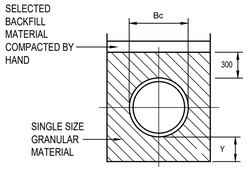
Rev	Description	Date
		Rev
DE_229_P10_001		Drg No
Camland		Client
Parcel 10 PH4 RM Landscape		Project
Location Plan		Title
1:1500 @ A1		Scale



PLAN
SCALE 1:250

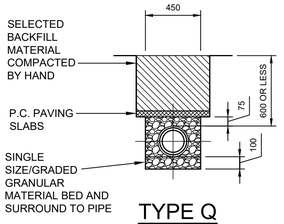


TYPE P BEDDING
SCALE 1:25

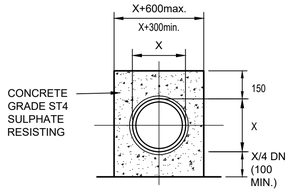


DIMENSION Y = ½BC OR 100mm UNDER BARRELS, AND 50mm UNDER SOCKETS WHICHEVER IS THE GREATER

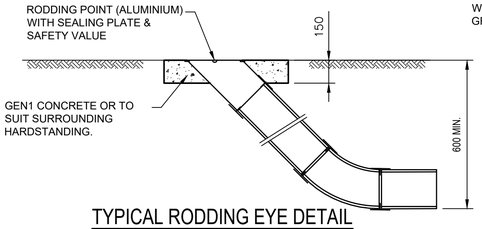
TYPE S BEDDING
SCALE 1:25



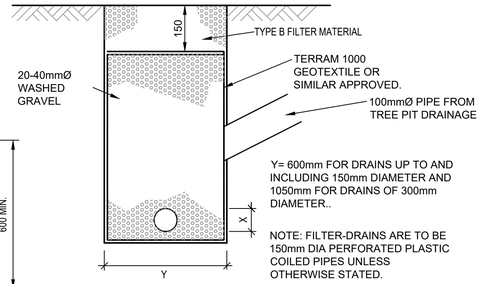
TYPE Q BEDDING
SCALE 1:25



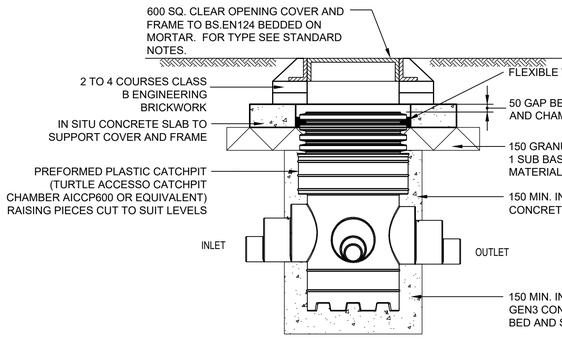
CLASS Z BEDDING
SCALE 1:25


RODDING POINT (ALUMINIUM) WITH SEALING PLATE & SAFETY VALUE
GEN1 CONCRETE OR TO SUIT SURROUNDING HARDSTANDING.
150
600 MIN.

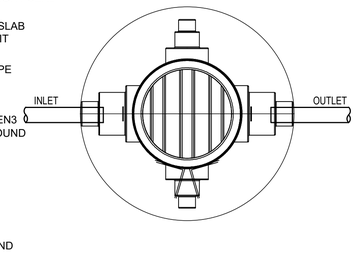
TYPICAL RODDING EYE DETAIL
SCALE 1:20

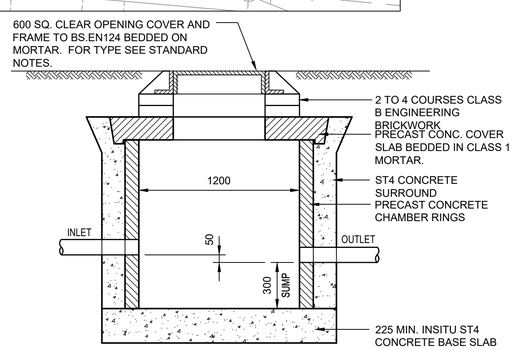

150
TYPE B FILTER MATERIAL
20-40mmØ WASHED GRAVEL
TERRAM 1000 GEOTEXTILE OR SIMILAR APPROVED.
100mmØ PIPE FROM TREE PIT DRAINAGE
Y= 600mm FOR DRAINS UP TO AND INCLUDING 150mm DIAMETER AND 1050mm FOR DRAINS OF 300mm DIAMETER..
NOTE: FILTER-DRAINS ARE TO BE 150mm DIA PERFORATED PLASTIC COILED PIPES UNLESS OTHERWISE STATED.
X
Y

FILTER DRAIN DETAIL "B"
SCALE 1:10

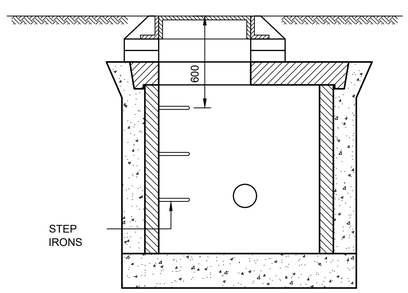

600 SQ. CLEAR OPENING COVER AND FRAME TO BS.EN124 BEDDED ON MORTAR. FOR TYPE SEE STANDARD NOTES.
2 TO 4 COURSES CLASS B ENGINEERING BRICKWORK
IN SITU CONCRETE SLAB TO SUPPORT COVER AND FRAME
PREFORMED PLASTIC CATCHPIT (TURTLE ACCESSO CATCHPIT CHAMBER AICCP600 OR EQUIVALENT) RAISING PIECES CUT TO SUIT LEVELS
INLET
OUTLET
FLEXIBLE WATERTIGHT SEAL
50 GAP BETWEEN SLAB AND CHAMBER UNIT
150 GRANULAR TYPE 1 SUB BASE MATERIAL
150 MIN. IN SITU GEN3 CONCRETE SURROUND
150 MIN. IN SITU GEN3 CONCRETE BED AND SURROUND

600mm DIAMETER CATCHPIT SECTION
SCALE 1:20



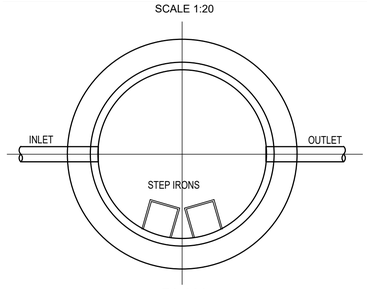

600 SQ. CLEAR OPENING COVER AND FRAME TO BS.EN124 BEDDED ON MORTAR. FOR TYPE SEE STANDARD NOTES.
2 TO 4 COURSES CLASS B ENGINEERING BRICKWORK
PRECAST CONC. COVER SLAB BEDDED IN CLASS 1 MORTAR.
ST4 CONCRETE SURROUND
PRECAST CONCRETE CHAMBER RINGS
1200
INLET
OUTLET
50
300
SUMP
225 MIN. INSITU ST4 CONCRETE BASE SLAB

CATCHPIT SECTION
SCALE 1:20



CATCHPIT SECTION
SCALE 1:20

600mm DIAMETER CATCHPIT PLAN
SCALE 1:20



PLAN
TYPICAL CATCHPIT DETAIL
SCALE 1:20

BEDDING NOTES

1. GRANULAR PIPE BEDDING MATERIAL FOR PIPES, AND BACKFILLING FOR TEMPORARY DRAINS (TRENCH SUB-DRAINS), SHALL CONSIST OF AGGREGATES FROM NATURAL SOURCES OR SINTERED PULVERIZED-FUEL ASH COMPLYING WITH THE RELEVANT PROVISIONS OF BS.882 AND BS.3797, PART 2 RESPECTIVELY, SIZED IN ACCORDANCE WITH THE FOLLOWING TABLE:

NOMINAL BORE OF PIPE (mm)	ALTERNATIVE AGGREGATE SIZES (mm)	
	SINGLE-SIZED	GRADED
100	10	-
150	10 OR 14	14 TO 5
225 - 300	10, 14 OR 20	14 TO 5 OR 20 TO 5
375 - 525	14 TO 20	14 TO 5 OR 20 TO 5
EXCEEDING	14, 20 OR 40	14 TO 5, 20 TO 5 OR 40 TO 5

2. SELECTED BACKFILL MATERIAL, WHETHER SELECTED FROM LOCALLY EXCAVATED MATERIAL OR IMPORTED, SHALL CONSIST OF UNIFORM, READILY COMPACTIBLE MATERIAL, FREE FROM VEGETABLE MATTER, BUILDING RUBBISH & FROZEN MATERIAL, OR MATERIALS SUSCEPTIBLE TO SPONTANEOUS COMBUSTION, & EXCLUDING CLAY OF LIQUID LIMIT GREATER THAN 80 AND/OR PLASTIC LIMIT GREATER THAN 55 AND MATERIALS OF EXCESSIVELY HIGH MOISTURE CONTENT. CLAY LUMPS AND STONES SHALL BE RETAINED ON 75mm AND 37.5mm SIEVES RESPECTIVELY.

3. COMPRESSIBLE FILLER FOR INTERRUPTING CONCRETE PROTECTION TO PIPELINES SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS.1142, PART 3 OR OTHER EQUALLY COMPRESSIBLE MATERIAL. THE THICKNESS OF COMPRESSIBLE FILLER SHALL BE AS FOLLOWS:

NOMINAL BORE OF PIPE (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
LESS THAN 450	18
450 - 1200	36
EXCEEDING 1200	54

4. THE CONTRACTOR IS TO PROTECT BURIED PIPES (PARTICULARLY SHALLOW PIPES) FROM DAMAGE CAUSED BY LOADS IMPOSED BY CONSTRUCTION PLANT.

5. BELOW ROADS AND OTHER PAVED AREAS TRENCHES SHALL BE BACKFILLED WITH DOT SPECIFICATION TYPE 1 SUB-BASE MATERIAL UP TO ROAD/PAVING FORMATION LEVEL. ALL OTHER TRENCHES,UNLESS OTHERWISE SPECIFIED SHALL BE BACKFILLED TO FINISHED GROUND LEVEL OR UNDERSIDE OF TOPSOIL LAYER WITH WELL COMPACTED EXCAVATED MATERIAL.

GRANULAR BEDDINGS

1. DIMENSION Y: 1/6 BC OR 100mm UNDER BARRELS, AND 50mm MIN. UNDER SOCKETS WHICHEVER IS THE GREATER (400 MAX.). ROCK ETC 1/4 BC AND 150mm MIN UNDER SOCKETS (400mm MAX.)
2. DN : NOMINAL BORE OF PIPE
3. BC : EXTERNAL DIAMETER OF PIPE BARREL

CONCRETE BEDDINGS

1. THE USE OF GRANULAR BEDDINGS BELOW CONCRETE BEDDINGS (BEDDING TYPES A2,A4,A6) ARE FOR USE IN WET CONDITIONS.
2. CONCRETE CRADLES MAY EXTEND TO SIDES OF TRENCH.
3. TRANSVERSE STEEL TO BE 0.4% MIN OF CONCRETE AT X-X (FM=3.4) UNLESS OTHERWISE STATED.
4. BEDDING BENEATH & AT SIDES OF PIPE TO BE WELL COMPACTED
5. BEDDING/BACKFILL DIRECTLY ABOVE PIPE TO BE LIGHTLY COMPACTED BY HAND.
6. DIMENSION Y: 1/6BC OR 100mm UNDER BARRELS, AND 50mm UNDER SOCKETS WHICHEVER IS GREATER (SUBJECT TO 400mm MAX.).
7. DN = NOMINAL BORE OF PIPE.
8. BC = EXTERNAL DIAMETER OF PIPE BARREL.

TRENCH WIDTH

1. THE MAXIMUM TRENCH WIDTHS ARE TO BE AS SHOWN BELOW UNLESS THE APPROVAL OF THE ENGINEER IS OBTAINED.

INTERNAL PIPE DIAMETER	MAXIMUM TRENCH WIDTH
100	600
150	600
225	700
300	850
375	1050
450	1150
525	1200
600	1350
675	1450
750	1500
825	1600
900	1900
975	2000
1050	2100
1200	2300

GENERAL NOTES

1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF CAMLAND CONSULTING LTD.
1.2 DO NOT SCALE FROM THIS DRAWING.

DRAINAGE NOTES:

1. THE CONTRACTOR IS TO CHECK ALL INFORMATION PROVIDED PRIOR TO COmmENCING WORKS, AND SEEK CLARIFICATION FROM THE ENGINEER IN RESPECT TO ANY AMBIGUITIES FOUND.
2. ALL COVERS WITHIN HARDSTANDING AREAS TO HAVE RECESSED COVERS TO ALLOW FOR SURFACING INFILL.
3. PIPE MATERIALS SHALL BE AS FOLLOWS:
   DIAMETER
   100Ø - 225Ø - CLASS 120 CLAYWARE TO BS EN 295
   NB. UPVC PIPES TO BS EN 1401-1:1998 MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER.
4. CLAY AND CONCRETE PIPES SHALL BE BEDDED ON CLASS S BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Z BEDDING. UPVC PIPES SHALL BE BEDDED ON CLASS P BEDDING UNLESS COVER IS LESS THAN 0.9m IN TRAFFICKED AREAS, THEN CLASS Q BEDDING.

KEY:

PROPOSED S104 SURFACE WATER DRAINAGE
PROPOSED S104 FOUL WATER DRAINAGE
PROPOSED FILTER DRAIN TO DETAIL B
LOCATION OF PROPOSED 100mmØ PLASTIC PIPE TO DRAIN TREE PITS
PROPOSED STORM DRAIN MIN. 150mmØ UNLESS OTHERWISE STATED. RECYCLED SUB BASE TO BE LAID ABOVE PIPE BEDDING TO UNDERSIDE OF FOOTPATH CONSTRUCTION
PROPOSED RODDING EYE ACCESS REFER TYPICAL RODDING EYE DETAIL
PROPOSED CATCHPIT, INVERT LEVELS REFER TO INCOMING PIPE AND OUTGOING PIPE WHERE DIAMETER DIFFERS.
PROPOSED TREE TO BE POSITIVELY DRAINED. OUTFALL FROM TREE PIT ASSUMED TO BE 750mm TO INVERT LEVEL.
LINEAR DRAIN WITH SUMP OUTLET UNIT.

KEY PLAN
NOT TO SCALE

Rev.	Amendments	Date	By
P1	INITIAL ISSUE.	23.09.25	RDT

Revisions

CAMLAND CONSULTING
Land · Development · Construction

Camland Consulting Ltd.
The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Client
EASTERN QUARRY LTD.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
INFRASTRUCTURE

Drawing
ASHMERE PARCEL 10
NEIGHBOURHOOD GREEN
PROPOSED DRAINAGE

Scales 1:250 At original size A1

Drawn RDT Checked DCT
Date 23.09.25

Status PRELIMINARY

Drawing No. B18075/369 Rev. P1

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	0.44
Return Period (years)	1	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	0.450
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

1 STANDARD Link Type

Template	Freeform Carrier	Auto Increment (mm)	75
Shape	Circular	Follow Ground	x
Barrels	1		

Available Diameters (mm)

150	225	300	375	450	600	750	900	1050	1200	1350	1500	1800

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	750
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	760
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	786
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	841
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100

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(Trench) Link Type

Template	Freeform Carrier	Height (mm)	979
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	826
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	750
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	805
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	979
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	959
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

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(Trench) Link Type

Template	Freeform Carrier	Height (mm)	979
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	750
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	807
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	807
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	946
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	1751
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

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(Trench) Link Type

Template	Freeform Carrier	Height (mm)	1806
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	1001
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

(Trench) Link Type

Template	Freeform Carrier	Height (mm)	981
Shape	Rectangular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)
100

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SP10RE01	0.015	5.00	9.660	150	558659.360	173370.190	0.750
SP10RE02	0.002	5.00	9.350	150	558627.656	173372.874	0.760
SP10CP03	0.000		9.310	600	558629.024	173364.189	0.805
SP10RE04	0.007	5.00	9.240	150	558620.857	173368.650	0.750
SP10CP05	0.018	5.00	9.260	600	558625.322	173362.095	0.841
SP10CP06	0.000		9.030	600	558618.159	173330.073	0.805
SP10CP07	0.005	5.00	9.010	600	558617.781	173325.761	0.849
SP10RE08	0.004	5.00	9.680	150	558663.020	173366.260	0.750
SP10RE09	0.002	5.00	9.400	150	558659.242	173328.451	0.750
SP10CP10	0.000		9.390	600	558651.210	173338.279	0.821
SP10CP11	0.021	5.00	9.330	600	558646.900	173336.414	0.826
SP10RE12	0.005	5.00	9.250	150	558644.549	173326.713	0.750
SP10CP13	0.000		9.120	300	558631.145	173326.531	0.805
SP10CP14	0.003	5.00	9.080	150	558628.790	173322.202	0.830
SP10CP15	0.025	5.00	9.030	600	558621.657	173324.841	0.979
SP10CP16	0.009	5.00	8.950	600	558625.288	173302.842	0.979
SP10CP17	0.000		8.790	600	558614.212	173290.895	0.907
SP10RE18	0.002	5.00	9.370	150	558658.370	173324.041	0.750
SP10CP19	0.003	5.00	9.300	600	558650.833	173323.840	0.805
SP10RE20	0.003	5.00	9.090	150	558656.271	173290.251	0.750
SP10CP21	0.000		9.120	600	558646.819	173299.526	0.862
SP10RE22	0.010	5.00	9.000	150	558652.338	173281.113	0.750
SP10CP23	0.002	5.00	9.980	600	558642.320	173281.989	1.806
SP10CP24	0.007	5.00	9.090	600	558643.604	173296.669	1.001
SP10CP25	0.002	5.00	8.980	600	558626.582	173298.157	0.981

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SP10CP26	0.000		8.800	600	558618.194	173286.914	0.885
SP10CP27	0.006	5.00	8.780	1200	558614.168	173288.574	1.500
OUTFALL	0.000		8.960	1800	558604.531	173276.662	2.095

Links

Name	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	30.924	0.600	8.910	8.560	0.350	88.4	150	5.48	34.1
2.000	8.792	0.600	8.590	8.560	0.030	293.1	150	5.25	34.6
1.001	4.253	0.600	8.505	8.474	0.031	137.2	150	5.56	33.9
3.000	7.931	0.600	8.490	8.474	0.016	495.7	150	5.30	34.5
1.002	32.813	0.600	8.419	8.280	0.139	236.1	150	6.41	31.6
1.003	4.329	0.600	8.225	8.216	0.009	481.0	150	6.57	31.2
1.004	3.984	0.600	8.161	8.051	0.110	36.2	150	6.61	31.2
4.000	30.371	0.600	8.930	8.624	0.306	99.3	150	5.50	33.9
5.000	12.693	0.600	8.650	8.624	0.026	488.2	150	5.47	34.0
4.001	4.696	0.600	8.569	8.559	0.010	469.6	150	5.67	33.8
4.002	18.598	0.600	8.504	8.370	0.134	138.8	150	6.04	31.9
6.000	13.405	0.600	8.500	8.370	0.130	103.1	150	5.23	34.7
4.003	4.928	0.600	8.315	8.305	0.010	492.8	150	6.22	31.5
4.004	7.606	0.600	8.250	8.051	0.199	38.2	150	6.30	30.8
1.005	22.297	0.600	8.071	8.026	0.045	495.5	150	7.44	29.0
1.006	16.291	0.600	7.971	7.938	0.033	493.7	150	8.05	27.8
1.007	2.321	0.600	7.883	7.859	0.024	96.7	150	8.09	27.7
7.000	7.540	0.600	8.620	8.550	0.070	107.7	150	5.13	35.0
7.001	24.643	0.600	8.495	8.313	0.182	135.4	150	5.61	33.8
8.000	13.243	0.600	8.340	8.313	0.027	490.5	150	5.49	34.0

	Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)
✓	1.000	1.070	18.9	1.4	0.600	0.600	0.015
✓	2.000	0.582	10.3	0.2	0.610	0.600	0.002
✓	1.001	0.856	15.1	1.6	0.655	0.636	0.017
✓	3.000	0.445	7.9	0.7	0.600	0.636	0.007
✓	1.002	0.650	11.5	3.6	0.691	0.600	0.042
✓	1.003	0.452	8.0	3.6	0.655	0.644	0.042
✓	1.004	1.678	29.6	4.0	0.699	0.829	0.047
✓	4.000	1.008	17.8	0.4	0.600	0.616	0.004
✓	5.000	0.448	7.9	0.2	0.600	0.616	0.002
✓	4.001	0.457	8.1	0.5	0.671	0.621	0.006
✓	4.002	0.851	15.0	2.3	0.676	0.600	0.027
✓	6.000	0.989	17.5	0.5	0.600	0.600	0.005
✓	4.003	0.446	7.9	2.7	0.655	0.625	0.032
✓	4.004	1.633	28.9	2.9	0.680	0.829	0.035
?	1.005	0.445	7.9	8.4	0.809	0.774	0.107
?	1.006	0.446	7.9	8.7	0.829	0.702	0.116
✓	1.007	1.022	18.1	8.7	0.757	0.771	0.116
✓	7.000	0.968	17.1	0.2	0.600	0.600	0.002
✓	7.001	0.862	15.2	0.5	0.655	0.657	0.005
✓	8.000	0.447	7.9	0.3	0.600	0.657	0.003

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Links

Name	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
7.002	4.301	0.600	8.258	8.144	0.114	37.7	150	5.65	33.7
9.000	10.056	0.600	8.250	8.229	0.021	478.9	150	5.37	34.3
9.001	14.736	0.600	8.174	8.144	0.030	491.2	150	5.92	32.7
7.003	17.087	0.600	8.089	8.054	0.035	488.2	150	6.56	31.1
7.004	14.027	0.600	7.999	7.970	0.029	483.7	150	7.07	30.5
7.005	4.355	0.600	7.915	7.871	0.044	99.0	150	7.15	30.4
1.008	15.322	0.600	7.280	6.865	0.415	36.9	150	8.24	26.7

	Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)
✓	7.002	1.643	29.0	0.7	0.712	0.796	0.008
?	9.000	0.453	8.0	0.9	0.600	1.601	0.010
?	9.001	0.447	7.9	1.1	1.656	0.796	0.012
✓	7.003	0.448	7.9	2.3	0.851	0.776	0.027
✓	7.004	0.450	8.0	2.4	0.831	0.680	0.029
✓	7.005	1.010	17.8	2.4	0.735	0.759	0.029
?	1.008	1.661	29.4	10.9	1.350	1.945	0.151

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	30.924	88.4	150	1 STANDARD	9.660	8.910	0.600	9.310	8.560	0.600
2.000	8.792	293.1	150	1 STANDARD	9.350	8.590	0.610	9.310	8.560	0.600
1.001	4.253	137.2	150	1 STANDARD	9.310	8.505	0.655	9.260	8.474	0.636
3.000	7.931	495.7	150	1 STANDARD	9.240	8.490	0.600	9.260	8.474	0.636
1.002	32.813	236.1	150	1 STANDARD	9.260	8.419	0.691	9.030	8.280	0.600
1.003	4.329	481.0	150	1 STANDARD	9.030	8.225	0.655	9.010	8.216	0.644
1.004	3.984	36.2	150	1 STANDARD	9.010	8.161	0.699	9.030	8.051	0.829
4.000	30.371	99.3	150	1 STANDARD	9.680	8.930	0.600	9.390	8.624	0.616
5.000	12.693	488.2	150	1 STANDARD	9.400	8.650	0.600	9.390	8.624	0.616
4.001	4.696	469.6	150	1 STANDARD	9.390	8.569	0.671	9.330	8.559	0.621
4.002	18.598	138.8	150	1 STANDARD	9.330	8.504	0.676	9.120	8.370	0.600
6.000	13.405	103.1	150	1 STANDARD	9.250	8.500	0.600	9.120	8.370	0.600
4.003	4.928	492.8	150	1 STANDARD	9.120	8.315	0.655	9.080	8.305	0.625

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SP10RE01	150	Manhole	1 STANDARD	SP10CP03	600	Manhole	1 STANDARD
2.000	SP10RE02	150	Manhole	1 STANDARD	SP10CP03	600	Manhole	1 STANDARD
1.001	SP10CP03	600	Manhole	1 STANDARD	SP10CP05	600	Manhole	1 STANDARD
3.000	SP10RE04	150	Manhole	1 STANDARD	SP10CP05	600	Manhole	1 STANDARD
1.002	SP10CP05	600	Manhole	1 STANDARD	SP10CP06	600	Manhole	1 STANDARD
1.003	SP10CP06	600	Manhole	1 STANDARD	SP10CP07	600	Manhole	1 STANDARD
1.004	SP10CP07	600	Manhole	1 STANDARD	SP10CP15	600	Manhole	1 STANDARD
4.000	SP10RE08	150	Manhole	1 STANDARD	SP10CP10	600	Manhole	1 STANDARD
5.000	SP10RE09	150	Manhole	2 STANDARD	SP10CP10	600	Manhole	1 STANDARD
4.001	SP10CP10	600	Manhole	1 STANDARD	SP10CP11	600	Manhole	1 STANDARD
4.002	SP10CP11	600	Manhole	1 STANDARD	SP10CP13	300	Manhole	1 STANDARD
6.000	SP10RE12	150	Manhole	1 STANDARD	SP10CP13	300	Manhole	1 STANDARD
4.003	SP10CP13	300	Manhole	1 STANDARD	SP10CP14	150	Manhole	1 STANDARD

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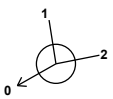
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.004	7.606	38.2	150	1 STANDARD	9.080	8.250	0.680	9.030	8.051	0.829
1.005	22.297	495.5	150	1 STANDARD	9.030	8.071	0.809	8.950	8.026	0.774
1.006	16.291	493.7	150	1 STANDARD	8.950	7.971	0.829	8.790	7.938	0.702
1.007	2.321	96.7	150	1 STANDARD	8.790	7.883	0.757	8.780	7.859	0.771
7.000	7.540	107.7	150	1 STANDARD	9.370	8.620	0.600	9.300	8.550	0.600
7.001	24.643	135.4	150	1 STANDARD	9.300	8.495	0.655	9.120	8.313	0.657
8.000	13.243	490.5	150	1 STANDARD	9.090	8.340	0.600	9.120	8.313	0.657
7.002	4.301	37.7	150	1 STANDARD	9.120	8.258	0.712	9.090	8.144	0.796
9.000	10.056	478.9	150	1 STANDARD	9.000	8.250	0.600	9.980	8.229	1.601
9.001	14.736	491.2	150	1 STANDARD	9.980	8.174	1.656	9.090	8.144	0.796
7.003	17.087	488.2	150	1 STANDARD	9.090	8.089	0.851	8.980	8.054	0.776
7.004	14.027	483.7	150	1 STANDARD	8.980	7.999	0.831	8.800	7.970	0.680
7.005	4.355	99.0	150	1 STANDARD	8.800	7.915	0.735	8.780	7.871	0.759
1.008	15.322	36.9	150	1 STANDARD	8.780	7.280	1.350	8.960	6.865	1.945

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.004	SP10CP14	150	Manhole	1 STANDARD	SP10CP15	600	Manhole	1 STANDARD
1.005	SP10CP15	600	Manhole	1 STANDARD	SP10CP16	600	Manhole	1 STANDARD
1.006	SP10CP16	600	Manhole	1 STANDARD	SP10CP17	600	Manhole	1 STANDARD
1.007	SP10CP17	600	Manhole	1 STANDARD	SP10CP27	1200	Manhole	1 STANDARD
7.000	SP10RE18	150	Manhole	3 MINI CATCH PIT	SP10CP19	600	Manhole	3 MINI CATCH PIT
7.001	SP10CP19	600	Manhole	3 MINI CATCH PIT	SP10CP21	600	Manhole	3 MINI CATCH PIT
8.000	SP10RE20	150	Manhole	3 MINI CATCH PIT	SP10CP21	600	Manhole	3 MINI CATCH PIT
7.002	SP10CP21	600	Manhole	3 MINI CATCH PIT	SP10CP24	600	Manhole	3 MINI CATCH PIT
9.000	SP10RE22	150	Manhole	3 MINI CATCH PIT	SP10CP23	600	Manhole	3 MINI CATCH PIT
9.001	SP10CP23	600	Manhole	3 MINI CATCH PIT	SP10CP24	600	Manhole	3 MINI CATCH PIT
7.003	SP10CP24	600	Manhole	3 MINI CATCH PIT	SP10CP25	600	Manhole	3 MINI CATCH PIT
7.004	SP10CP25	600	Manhole	3 MINI CATCH PIT	SP10CP26	600	Manhole	3 MINI CATCH PIT
7.005	SP10CP26	600	Manhole	3 MINI CATCH PIT	SP10CP27	1200	Manhole	1 STANDARD
1.008	SP10CP27	1200	Manhole	1 STANDARD	OUTFALL	1800	Manhole	1 STANDARD

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SP10RE01	558659.360	173370.190	9.660	0.750	150				
						0	1.000	8.910	150
SP10RE02	558627.656	173372.874	9.350	0.760	150				
						0	2.000	8.590	150
SP10CP03	558629.024	173364.189	9.310	0.805	600				
						1	2.000	8.560	150
						2	1.000	8.560	150
						0	1.001	8.505	150
SP10RE04	558620.857	173368.650	9.240	0.750	150				
						0	3.000	8.490	150

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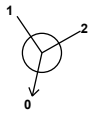
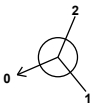
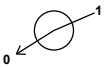
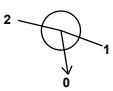
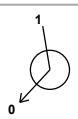
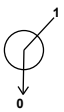
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SP10CP05	558625.322	173362.095	9.260	0.841	600		1	3.000	8.474	150
							2	1.001	8.474	150
							0	1.002	8.419	150
SP10CP06	558618.159	173330.073	9.030	0.805	600		1	1.002	8.280	150
							0	1.003	8.225	150
SP10CP07	558617.781	173325.761	9.010	0.849	600		1	1.003	8.216	150
							0	1.004	8.161	150
SP10RE08	558663.020	173366.260	9.680	0.750	150		0	4.000	8.930	150
SP10RE09	558659.242	173328.451	9.400	0.750	150		0	5.000	8.650	150
SP10CP10	558651.210	173338.279	9.390	0.821	600		1	5.000	8.624	150
							2	4.000	8.624	150
							0	4.001	8.569	150
SP10CP11	558646.900	173336.414	9.330	0.826	600		1	4.001	8.559	150
							0	4.002	8.504	150
SP10RE12	558644.549	173326.713	9.250	0.750	150		0	6.000	8.500	150
SP10CP13	558631.145	173326.531	9.120	0.805	300		1	6.000	8.370	150
							2	4.002	8.370	150
							0	4.003	8.315	150
SP10CP14	558628.790	173322.202	9.080	0.830	150		1	4.003	8.305	150
							0	4.004	8.250	150
SP10CP15	558621.657	173324.841	9.030	0.979	600		1	4.004	8.051	150
							2	1.004	8.051	150
							0	1.005	8.071	150
SP10CP16	558625.288	173302.842	8.950	0.979	600		1	1.005	8.026	150
							0	1.006	7.971	150
SP10CP17	558614.212	173290.895	8.790	0.907	600		1	1.006	7.938	150
							0	1.007	7.883	150

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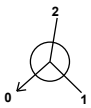
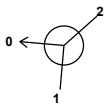
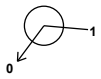
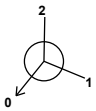
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SP10RE18	558658.370	173324.041	9.370	0.750	150		0	7.000	8.620	150
SP10CP19	558650.833	173323.840	9.300	0.805	600		1	7.000	8.550	150
							0	7.001	8.495	150
SP10RE20	558656.271	173290.251	9.090	0.750	150		0	8.000	8.340	150
SP10CP21	558646.819	173299.526	9.120	0.862	600		1	8.000	8.313	150
							2	7.001	8.313	150
							0	7.002	8.258	150
SP10RE22	558652.338	173281.113	9.000	0.750	150		0	9.000	8.250	150
SP10CP23	558642.320	173281.989	9.980	1.806	600		1	9.000	8.229	150
							0	9.001	8.174	150
SP10CP24	558643.604	173296.669	9.090	1.001	600		1	9.001	8.144	150
							2	7.002	8.144	150
							0	7.003	8.089	150
SP10CP25	558626.582	173298.157	8.980	0.981	600		1	7.003	8.054	150
							0	7.004	7.999	150
SP10CP26	558618.194	173286.914	8.800	0.885	600		1	7.004	7.970	150
							0	7.005	7.915	150
SP10CP27	558614.168	173288.574	8.780	1.500	1200		1	7.005	7.871	150
							2	1.007	7.859	150
							0	1.008	7.280	150
OUTFALL	558604.531	173276.662	8.960	2.095	1800		1	1.008	6.865	150

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	20.0		

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Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	20	0	0
100	40	0	0

Node SFCC17 Online Orifice Control

Flap Valve	x	Design Depth (m)	1.000	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	18.2		
Invert Level (m)	0.000	Diameter (m)	0.060		

Node SFCC17 Online Orifice Control

Flap Valve	x	Invert Level (m)	0.000	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.090		

Node SP10CP03 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.560	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	8	Diameter (mm)	600

Node SP10CP03 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	2.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.560	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	15	Diameter (mm)	600

Node SP10CP05 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	3.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.474	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	19	Diameter (mm)	600

Node SP10CP06 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	1.002
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.280	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	26	Diameter (mm)	600

Node SP10CP15 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	1.004
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.051	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	32	Diameter (mm)	600

Node SP10CP13 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	4.002
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.370	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	24	Diameter (mm)	600

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Node SP10CP13 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	6.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.370	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	24	Diameter (mm)	600

Node SP10CP14 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	4.003
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.305	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	28	Diameter (mm)	600

Node SP10CP15 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	4.004
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.051	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	31	Diameter (mm)	600

Node SP10CP16 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	1.005
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.026	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	32	Diameter (mm)	600

Node SP10CP17 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	1.006
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.938	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	31	Diameter (mm)	600

Node SP10CP19 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	7.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.550	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)		Diameter (mm)	600

Node SP10CP21 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	7.001
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.313	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)		Diameter (mm)	600

Node SP10CP21 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	8.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.313	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)		Diameter (mm)	600

Node SP10CP24 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	7.002
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.144	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	6	Diameter (mm)	600

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Node SP10CP23 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	9.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.229	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	6	Diameter (mm)	600

Node SP10CP24 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	9.001
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.144	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	7	Diameter (mm)	600

Node SP10CP25 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	7.003
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.054	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	8	Diameter (mm)	600

Node SP10CP26 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	7.004
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.970	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	5	Diameter (mm)	600

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Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SP10RE01	11	8.937	0.027	1.3	0.0112	0.0000	OK
15 minute summer	SP10RE02	11	8.605	0.015	0.2	0.0011	0.0000	OK
15 minute winter	SP10CP03	11	8.538	0.033	1.5	0.0095	0.0000	OK
15 minute winter	SP10RE04	11	8.519	0.029	0.6	0.0060	0.0000	OK
15 minute winter	SP10CP05	11	8.477	0.058	3.6	0.0426	0.0000	OK
15 minute winter	SP10CP06	12	8.292	0.067	3.5	0.0277	0.0000	OK
15 minute winter	SP10CP07	12	8.197	0.036	3.8	0.0146	0.0000	OK
15 minute winter	SP10RE08	11	8.944	0.014	0.4	0.0018	0.0000	OK
15 minute summer	SP10RE09	11	8.668	0.018	0.2	0.0013	0.0000	OK
15 minute winter	SP10CP10	11	8.596	0.027	0.5	0.0075	0.0000	OK
15 minute winter	SP10CP11	11	8.545	0.041	2.3	0.0322	0.0000	OK
15 minute winter	SP10RE12	11	8.516	0.016	0.4	0.0024	0.0000	OK
15 minute winter	SP10CP13	11	8.374	0.059	2.7	0.0054	0.0000	OK
15 minute winter	SP10CP14	11	8.283	0.033	3.0	0.0030	0.0000	OK
15 minute winter	SP10CP15	12	8.192	0.141	8.9	0.4621	0.0000	OK
15 minute winter	SP10CP16	14	8.085	0.114	8.6	0.4621	0.0000	OK
15 minute winter	SP10CP17	15	7.961	0.078	7.6	0.0893	0.0000	OK
15 minute winter	SP10RE18	11	8.632	0.012	0.2	0.0008	0.0000	OK
15 minute winter	SP10CP19	11	8.513	0.018	0.5	0.0066	0.0000	OK
15 minute winter	SP10RE20	11	8.362	0.022	0.3	0.0021	0.0000	OK
15 minute winter	SP10CP21	11	8.275	0.017	0.8	0.0049	0.0000	OK
15 minute winter	SP10RE22	10	8.285	0.035	0.9	0.0098	0.0000	OK
15 minute winter	SP10CP23	11	8.213	0.039	1.0	0.0119	0.0000	OK
15 minute winter	SP10CP24	12	8.147	0.058	2.4	0.0255	0.0000	OK
15 minute winter	SP10CP25	12	8.058	0.059	2.5	0.0210	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SP10RE01	1.000	SP10CP03	1.3	0.612	0.068	0.0653	
15 minute summer	SP10RE02	2.000	SP10CP03	0.2	0.248	0.019	0.0071	
15 minute winter	SP10CP03	1.001	SP10CP05	1.5	0.528	0.098	0.0120	
15 minute winter	SP10RE04	3.000	SP10CP05	0.6	0.305	0.076	0.0157	
15 minute winter	SP10CP05	1.002	SP10CP06	3.5	0.586	0.304	0.1955	
15 minute winter	SP10CP06	1.003	SP10CP07	3.5	0.530	0.437	0.0285	
15 minute winter	SP10CP07	1.004	SP10CP15	3.8	0.365	0.128	0.0408	
15 minute winter	SP10RE08	4.000	SP10CP10	0.3	0.395	0.019	0.0260	
15 minute summer	SP10RE09	5.000	SP10CP10	0.2	0.212	0.024	0.0117	
15 minute winter	SP10CP10	4.001	SP10CP11	0.5	0.302	0.065	0.0083	
15 minute winter	SP10CP11	4.002	SP10CP13	2.3	0.615	0.155	0.0706	
15 minute winter	SP10RE12	6.000	SP10CP13	0.4	0.407	0.023	0.0132	
15 minute winter	SP10CP13	4.003	SP10CP14	2.7	0.488	0.346	0.0276	
15 minute winter	SP10CP14	4.004	SP10CP15	3.0	0.312	0.105	0.0758	
15 minute winter	SP10CP15	1.005	SP10CP16	7.9	0.626	1.011	0.2801	
15 minute winter	SP10CP16	1.006	SP10CP17	7.6	0.632	0.970	0.1953	
15 minute winter	SP10CP17	1.007	SP10CP27	7.5	0.891	0.416	0.0196	
15 minute winter	SP10RE18	7.000	SP10CP19	0.2	0.324	0.012	0.0046	
15 minute winter	SP10CP19	7.001	SP10CP21	0.5	0.391	0.031	0.0301	
15 minute winter	SP10RE20	8.000	SP10CP21	0.3	0.242	0.037	0.0164	
15 minute winter	SP10CP21	7.002	SP10CP24	0.8	0.692	0.026	0.0048	
15 minute winter	SP10RE22	9.000	SP10CP23	0.8	0.337	0.106	0.0255	
15 minute winter	SP10CP23	9.001	SP10CP24	1.0	0.353	0.132	0.0439	
15 minute winter	SP10CP24	7.003	SP10CP25	2.3	0.446	0.293	0.0891	
15 minute winter	SP10CP25	7.004	SP10CP26	2.5	0.457	0.308	0.0756	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SP10CP26	12	7.955	0.040	2.5	0.0113	0.0000	OK
15 minute winter	SP10CP27	14	7.342	0.062	9.7	0.0750	0.0000	OK
15 minute winter	OUTFALL	14	6.924	0.059	9.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SP10CP26	7.005	SP10CP27	2.5	0.680	0.137	0.0157	
15 minute winter	SP10CP27	1.008	OUTFALL	9.7	1.456	0.331	0.1023	6.0

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SP10RE01	10	8.970	0.060	6.4	0.0253	0.0000	OK
15 minute winter	SP10RE02	13	8.633	0.043	0.9	0.0030	0.0000	OK
15 minute winter	SP10CP03	13	8.634	0.129	7.1	0.3235	0.0000	OK
15 minute winter	SP10RE04	13	8.631	0.141	3.0	0.0287	0.0000	OK
15 minute winter	SP10CP05	13	8.630	0.211	16.2	0.7147	0.0000	SURCHARGED
15 minute winter	SP10CP06	16	8.521	0.296	13.2	2.9532	0.0000	SURCHARGED
15 minute winter	SP10CP07	15	8.505	0.344	9.2	0.1380	0.0000	SURCHARGED
15 minute winter	SP10RE08	11	8.961	0.031	1.7	0.0038	0.0000	OK
15 minute winter	SP10RE09	10	8.685	0.035	0.9	0.0025	0.0000	OK
15 minute winter	SP10CP10	11	8.626	0.057	2.5	0.0160	0.0000	OK
15 minute winter	SP10CP11	10	8.605	0.101	11.4	0.0796	0.0000	OK
15 minute winter	SP10RE12	10	8.535	0.035	2.1	0.0053	0.0000	OK
15 minute winter	SP10CP13	14	8.509	0.194	13.1	1.1404	0.0000	SURCHARGED
15 minute winter	SP10CP14	15	8.502	0.252	10.8	0.5021	0.0000	SURCHARGED
15 minute winter	SP10CP15	15	8.490	0.439	23.2	2.6112	0.0000	SURCHARGED
30 minute winter	SP10CP16	25	8.247	0.276	19.2	2.3913	0.0000	SURCHARGED
30 minute winter	SP10CP17	27	8.039	0.156	17.8	0.7055	0.0000	SURCHARGED
15 minute winter	SP10RE18	10	8.644	0.024	0.9	0.0017	0.0000	OK
15 minute winter	SP10CP19	11	8.533	0.038	2.2	0.0136	0.0000	OK
15 minute winter	SP10RE20	10	8.382	0.042	1.3	0.0041	0.0000	OK
15 minute winter	SP10CP21	10	8.293	0.035	3.3	0.0098	0.0000	OK
15 minute winter	SP10RE22	10	8.327	0.077	4.3	0.0219	0.0000	OK
15 minute winter	SP10CP23	11	8.259	0.085	5.1	0.1304	0.0000	OK
15 minute winter	SP10CP24	12	8.225	0.136	10.9	0.5857	0.0000	OK
15 minute winter	SP10CP25	14	8.130	0.131	10.3	0.5263	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SP10RE01	1.000	SP10CP03	6.2	0.952	0.328	0.2068	
15 minute winter	SP10RE02	2.000	SP10CP03	0.9	0.364	0.085	0.0559	
15 minute winter	SP10CP03	1.001	SP10CP05	6.0	0.710	0.399	0.0716	
15 minute winter	SP10RE04	3.000	SP10CP05	2.5	0.400	0.315	0.1379	
15 minute winter	SP10CP05	1.002	SP10CP06	13.2	0.783	1.149	0.5777	
15 minute winter	SP10CP06	1.003	SP10CP07	9.1	0.651	1.134	0.0762	
15 minute winter	SP10CP07	1.004	SP10CP15	9.3	0.530	0.315	0.0701	
15 minute winter	SP10RE08	4.000	SP10CP10	1.6	0.630	0.092	0.0790	
15 minute winter	SP10RE09	5.000	SP10CP10	0.8	0.333	0.107	0.0325	
15 minute winter	SP10CP10	4.001	SP10CP11	2.5	0.479	0.313	0.0248	
15 minute winter	SP10CP11	4.002	SP10CP13	11.1	0.907	0.738	0.2426	
15 minute winter	SP10RE12	6.000	SP10CP13	2.1	0.511	0.119	0.1265	
15 minute winter	SP10CP13	4.003	SP10CP14	9.5	0.717	1.199	0.0868	
15 minute winter	SP10CP14	4.004	SP10CP15	8.9	0.578	0.307	0.1339	
15 minute winter	SP10CP15	1.005	SP10CP16	17.2	0.977	2.189	0.3925	
30 minute winter	SP10CP16	1.006	SP10CP17	17.8	1.025	2.260	0.2693	
30 minute winter	SP10CP17	1.007	SP10CP27	17.7	1.052	0.978	0.0383	
15 minute winter	SP10RE18	7.000	SP10CP19	0.9	0.502	0.051	0.0132	
15 minute winter	SP10CP19	7.001	SP10CP21	2.1	0.605	0.138	0.0855	
15 minute winter	SP10RE20	8.000	SP10CP21	1.2	0.374	0.157	0.0445	
15 minute winter	SP10CP21	7.002	SP10CP24	3.4	0.839	0.116	0.0268	
15 minute winter	SP10RE22	9.000	SP10CP23	4.2	0.542	0.526	0.0781	
15 minute winter	SP10CP23	9.001	SP10CP24	4.7	0.526	0.597	0.1463	
15 minute winter	SP10CP24	7.003	SP10CP25	9.6	0.673	1.209	0.2378	
15 minute winter	SP10CP25	7.004	SP10CP26	9.5	0.683	1.190	0.1913	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.27%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SP10CP26	14	8.002	0.087	9.5	0.1491	0.0000	OK
15 minute winter	SP10CP27	15	7.407	0.127	27.1	0.1541	0.0000	OK
15 minute winter	OUTFALL	15	6.979	0.114	27.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SP10CP26	7.005	SP10CP27	9.3	0.953	0.524	0.0427	
15 minute winter	SP10CP27	1.008	OUTFALL	27.1	1.791	0.923	0.2317	29.3

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SP10RE01	10	8.987	0.077	10.1	0.0323	0.0000	OK
15 minute winter	SP10RE02	14	8.809	0.219	1.4	0.0153	0.0000	SURCHARGED
15 minute winter	SP10CP03	14	8.807	0.302	11.4	1.5843	0.0000	SURCHARGED
15 minute winter	SP10RE04	14	8.802	0.312	4.7	0.0637	0.0000	SURCHARGED
15 minute winter	SP10CP05	14	8.801	0.382	18.7	1.6512	0.0000	SURCHARGED
30 minute winter	SP10CP06	26	8.667	0.442	12.7	5.8028	0.0000	SURCHARGED
30 minute winter	SP10CP07	26	8.650	0.489	9.9	0.1959	0.0000	SURCHARGED
15 minute winter	SP10RE08	10	8.969	0.039	2.7	0.0049	0.0000	OK
15 minute winter	SP10RE09	12	8.719	0.069	1.3	0.0049	0.0000	OK
15 minute winter	SP10CP10	12	8.720	0.151	4.0	0.0428	0.0000	SURCHARGED
15 minute winter	SP10CP11	12	8.719	0.215	16.3	0.1700	0.0000	SURCHARGED
30 minute winter	SP10RE12	25	8.655	0.155	2.6	0.0234	0.0000	SURCHARGED
30 minute winter	SP10CP13	25	8.655	0.340	16.1	3.6587	0.0000	SURCHARGED
30 minute winter	SP10CP14	25	8.646	0.396	10.0	0.9417	0.0000	SURCHARGED
30 minute winter	SP10CP15	25	8.632	0.581	22.2	3.7079	0.0000	SURCHARGED
30 minute winter	SP10CP16	25	8.317	0.346	22.7	3.3536	0.0000	SURCHARGED
30 minute winter	SP10CP17	27	8.065	0.182	20.7	0.9088	0.0000	SURCHARGED
15 minute winter	SP10RE18	10	8.649	0.029	1.3	0.0020	0.0000	OK
15 minute winter	SP10CP19	11	8.543	0.048	3.3	0.0170	0.0000	OK
15 minute winter	SP10RE20	10	8.393	0.053	2.0	0.0052	0.0000	OK
15 minute winter	SP10CP21	11	8.301	0.043	5.2	0.0122	0.0000	OK
15 minute winter	SP10RE22	10	8.350	0.100	6.7	0.0283	0.0000	OK
15 minute winter	SP10CP23	12	8.302	0.128	7.9	0.3469	0.0000	OK
15 minute winter	SP10CP24	12	8.285	0.196	16.4	1.1419	0.0000	SURCHARGED
15 minute winter	SP10CP25	14	8.180	0.181	14.7	0.9418	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SP10RE01	1.000	SP10CP03	10.0	1.033	0.529	0.4096	
15 minute winter	SP10RE02	2.000	SP10CP03	1.4	0.383	0.137	0.1548	
15 minute winter	SP10CP03	1.001	SP10CP05	6.4	0.725	0.420	0.0749	
15 minute winter	SP10RE04	3.000	SP10CP05	3.8	0.413	0.486	0.1396	
15 minute winter	SP10CP05	1.002	SP10CP06	13.3	0.785	1.159	0.5777	
30 minute winter	SP10CP06	1.003	SP10CP07	9.9	0.606	1.239	0.0762	
30 minute winter	SP10CP07	1.004	SP10CP15	10.1	0.575	0.342	0.0701	
15 minute winter	SP10RE08	4.000	SP10CP10	2.7	0.686	0.150	0.2302	
15 minute winter	SP10RE09	5.000	SP10CP10	1.3	0.363	0.170	0.1261	
15 minute winter	SP10CP10	4.001	SP10CP11	3.5	0.424	0.435	0.0827	
15 minute winter	SP10CP11	4.002	SP10CP13	15.4	0.958	1.022	0.3274	
30 minute winter	SP10RE12	6.000	SP10CP13	2.6	0.494	0.147	0.2360	
30 minute winter	SP10CP13	4.003	SP10CP14	8.9	0.707	1.130	0.0868	
30 minute winter	SP10CP14	4.004	SP10CP15	7.7	0.491	0.269	0.1339	
30 minute winter	SP10CP15	1.005	SP10CP16	19.3	1.099	2.461	0.3925	
30 minute winter	SP10CP16	1.006	SP10CP17	20.7	1.178	2.625	0.2762	
30 minute winter	SP10CP17	1.007	SP10CP27	20.6	1.176	1.143	0.0393	
15 minute winter	SP10RE18	7.000	SP10CP19	1.3	0.562	0.076	0.0174	
15 minute winter	SP10CP19	7.001	SP10CP21	3.2	0.682	0.213	0.1171	
15 minute winter	SP10RE20	8.000	SP10CP21	1.9	0.426	0.247	0.0610	
15 minute winter	SP10CP21	7.002	SP10CP24	5.2	0.837	0.179	0.0453	
15 minute winter	SP10RE22	9.000	SP10CP23	6.6	0.623	0.824	0.1062	
15 minute winter	SP10CP23	9.001	SP10CP24	6.7	0.527	0.847	0.2445	
15 minute winter	SP10CP24	7.003	SP10CP25	13.7	0.800	1.726	0.2854	
15 minute winter	SP10CP25	7.004	SP10CP26	13.4	0.798	1.684	0.2182	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SP10CP26	15	8.025	0.110	13.4	0.3159	0.0000	OK
30 minute winter	SP10CP27	23	7.673	0.393	34.0	0.4763	0.0000	SURCHARGED
60 minute winter	OUTFALL	37	7.017	0.152	30.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SP10CP26	7.005	SP10CP27	13.3	1.029	0.743	0.0560	
30 minute winter	SP10CP27	1.008	OUTFALL	33.9	1.925	1.154	0.2697	60.7

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.62%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SP10RE01	10	8.995	0.085	11.7	0.0353	0.0000	OK
15 minute winter	SP10RE02	14	8.884	0.294	2.2	0.0205	0.0000	SURCHARGED
15 minute winter	SP10CP03	14	8.885	0.380	12.0	2.3493	0.0000	SURCHARGED
15 minute winter	SP10RE04	14	8.879	0.389	5.5	0.0793	0.0000	SURCHARGED
15 minute winter	SP10CP05	14	8.878	0.459	20.0	2.0723	0.0000	SURCHARGED
30 minute winter	SP10CP06	27	8.735	0.510	12.7	7.1521	0.0000	FLOOD RISK
30 minute winter	SP10CP07	27	8.715	0.554	10.5	0.2220	0.0000	FLOOD RISK
15 minute winter	SP10RE08	10	8.972	0.042	3.1	0.0052	0.0000	OK
15 minute winter	SP10RE09	12	8.814	0.164	1.6	0.0116	0.0000	SURCHARGED
15 minute winter	SP10CP10	12	8.809	0.240	4.2	0.0680	0.0000	SURCHARGED
15 minute winter	SP10CP11	12	8.806	0.302	17.4	0.2390	0.0000	SURCHARGED
30 minute winter	SP10RE12	25	8.719	0.219	3.0	0.0331	0.0000	SURCHARGED
30 minute winter	SP10CP13	25	8.719	0.404	17.1	4.9004	0.0000	SURCHARGED
30 minute winter	SP10CP14	25	8.709	0.459	9.5	1.1350	0.0000	SURCHARGED
30 minute winter	SP10CP15	26	8.694	0.643	23.2	4.1904	0.0000	SURCHARGED
30 minute winter	SP10CP16	26	8.348	0.377	24.0	3.7907	0.0000	SURCHARGED
30 minute winter	SP10CP17	27	8.073	0.190	21.6	0.9673	0.0000	SURCHARGED
15 minute winter	SP10RE18	10	8.652	0.032	1.6	0.0023	0.0000	OK
15 minute winter	SP10CP19	10	8.547	0.052	3.9	0.0185	0.0000	OK
15 minute winter	SP10RE20	10	8.397	0.057	2.3	0.0055	0.0000	OK
15 minute winter	SP10CP21	13	8.313	0.055	6.0	0.0155	0.0000	OK
15 minute winter	SP10RE22	10	8.360	0.110	7.8	0.0311	0.0000	OK
15 minute winter	SP10CP23	12	8.338	0.164	9.3	0.5224	0.0000	SURCHARGED
15 minute winter	SP10CP24	13	8.317	0.228	18.8	1.4759	0.0000	SURCHARGED
15 minute winter	SP10CP25	14	8.195	0.196	15.9	1.0658	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SP10RE01	1.000	SP10CP03	11.6	1.008	0.612	0.4303	
15 minute winter	SP10RE02	2.000	SP10CP03	1.2	0.365	0.112	0.1548	
15 minute winter	SP10CP03	1.001	SP10CP05	6.2	0.690	0.408	0.0749	
15 minute winter	SP10RE04	3.000	SP10CP05	4.3	0.431	0.543	0.1396	
15 minute winter	SP10CP05	1.002	SP10CP06	13.9	0.803	1.210	0.5777	
30 minute winter	SP10CP06	1.003	SP10CP07	10.5	0.627	1.319	0.0762	
30 minute winter	SP10CP07	1.004	SP10CP15	10.7	0.610	0.362	0.0701	
15 minute winter	SP10RE08	4.000	SP10CP10	3.0	0.665	0.171	0.3268	
15 minute winter	SP10RE09	5.000	SP10CP10	1.5	0.351	0.189	0.2235	
15 minute winter	SP10CP10	4.001	SP10CP11	4.1	0.437	0.502	0.0827	
15 minute winter	SP10CP11	4.002	SP10CP13	16.5	0.946	1.098	0.3274	
30 minute winter	SP10RE12	6.000	SP10CP13	2.8	0.486	0.158	0.2360	
30 minute winter	SP10CP13	4.003	SP10CP14	8.4	0.693	1.068	0.0868	
30 minute winter	SP10CP14	4.004	SP10CP15	7.8	0.468	0.269	0.1339	
30 minute winter	SP10CP15	1.005	SP10CP16	20.3	1.152	2.579	0.3925	
30 minute winter	SP10CP16	1.006	SP10CP17	21.6	1.228	2.742	0.2792	
30 minute winter	SP10CP17	1.007	SP10CP27	21.6	1.227	1.194	0.0396	
15 minute winter	SP10RE18	7.000	SP10CP19	1.6	0.594	0.092	0.0201	
15 minute winter	SP10CP19	7.001	SP10CP21	3.8	0.713	0.249	0.1313	
15 minute winter	SP10RE20	8.000	SP10CP21	2.3	0.445	0.285	0.0673	
15 minute winter	SP10CP21	7.002	SP10CP24	6.1	0.855	0.208	0.0504	
15 minute winter	SP10RE22	9.000	SP10CP23	7.7	0.653	0.962	0.1370	
15 minute winter	SP10CP23	9.001	SP10CP24	7.4	0.542	0.931	0.2594	
15 minute winter	SP10CP24	7.003	SP10CP25	14.6	0.843	1.837	0.2970	
15 minute winter	SP10CP25	7.004	SP10CP26	14.3	0.844	1.797	0.2215	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.62%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SP10CP26	15	8.031	0.116	14.3	0.3563	0.0000	OK
30 minute winter	SP10CP27	23	7.776	0.496	36.5	0.6006	0.0000	SURCHARGED
15 minute summer	OUTFALL	20	7.017	0.152	34.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SP10CP26	7.005	SP10CP27	14.2	1.043	0.795	0.0591	
30 minute winter	SP10CP27	1.008	OUTFALL	36.4	2.068	1.240	0.2697	70.8

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Dormouse Monitoring 2025

Eastern Quarry BAP

Eastern Quarry, Swanscombe, Kent

A Report To: Camland Developments Ltd
Report Number: RT-MME-121456-EQ-2025-102
Date: December 2025

Middlemarch Environmental Ltd, Triumph House, Birmingham Road, Allesley, Coventry, CV5 9AZ
www.middlemarch.eco
Tel: 01676 525880

Quality Assurance

Date	Version	Author	Checked & approved by
22/12/2025	Final	Nico Spaarkogel MSc (Ecological Consultant)	Jacob Kench BSc (Principal Ecological Consultant)

Declaration of Compliance

This study has been undertaken in accordance with British Standard 42020:2013 "Biodiversity, Code of Practice for Planning and Development". The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Disclaimer

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client's brief, no site investigation can ensure complete assessment or prediction of the natural environment. Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

Summary

Middlemarch Environmental Ltd was commissioned by Camland Developments to undertake dormouse monitoring surveys at the site of Eastern Quarry, Swanscombe, Kent, in order to provide information for the site and implementation of the Biodiversity Action Plan Monitoring and Management Requirements. Following the surveys, several recommendations have been made:

R1 As dormouse have been recorded, no works should be undertaken which would breach the legislation outlined in Appendix 1.

R2 Where vegetation clearance is needed on site works will be reviewed and subject to a detailed review of the impacts. If impacts on dormice are considered possible, a Natural England European Protected Species Licence will be required.

R3 Monitoring works should continue as part of the implementation of the Biodiversity Action Plan Monitoring and Management Plan for the site.

R4 Further compensatory dormouse habitat creation should be undertaken on site in line with the Natural England site licence. This will help to increase connectivity between habitats, improve overall habitat suitability and compensate for the loss of former or existing areas of suitable habitat subject to previous or future clearance/development. All compensatory habitat creation should be completed as far in advance of the clearance of areas of suitable habitat as possible, so that plants have time to establish and improve habitat suitability.

R5 Management programmes as listed in the Parcel Biodiversity Action Plans (known as Mini BAP documents) should be followed to ensure management of woodland and scrub on site is ongoing. This includes selective felling and replanting, rotational coppice and general management to ensure the areas provide suitable habitat for dormice and as broad a range of other species as possible through creation varied age structure.

R6 Native species-rich hedgerows should be planted on site wherever possible (suggested species list detailed in section 5). Native species-rich hedgerows will be used by dormice and a wide range of other species in order to nest, feed, shelter and hibernate.

R7 Native plant species favoured by dormice should be incorporated into landscaping designs, including gardens, amenity and recreational space, street trees and shrub borders, which adjoin areas of existing habitat that is known to or has the potential to support dormice (suggested species list detailed in section 5).

R8 Site designs should ensure existing areas of habitat known to support, or that are suitable for, dormice remain connected in order not to fragment existing dormouse populations and habitats. If possible, connections should be made to suitable off-site habitat as well. This may include the implementation of habitat bridges over barriers such as roads, car parks or buildings.

R9 Several dormouse boxes on Transects 3, 9 and 15 became unsuitable during the year. A total of 10 replacement boxes should be sourced and set out. This work is necessary to ensure survey effort remains the same and survey results remain comparable between years.

Full recommendations can be found in section 5 of this report.

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1. Introduction

1.1 Project Background

As part of the ecological monitoring work for 2025, Camland Developments commissioned Middlemarch Environmental Ltd to undertake monitoring surveys for dormouse *Muscardinus avellanarius* at the site of Eastern Quarry, Swanscombe, Kent. This survey is required to provide up to date information for the site's monitoring and management requirements, as specified in the Eastern Quarry Biodiversity Action Plan (EQBAP). Middlemarch Environmental Ltd has been involved with the site since 2006 and has carried out numerous surveys as part of the monitoring scheme for the site. This is the tenth year that dormouse surveys have been undertaken across the wider site in areas of suitable habitat.

Dormice and the areas they use for shelter are subject to European-wide protection under the Conservation of Habitats and Species Regulations 2010 (Habitats Regulations, 2010). The species receives further legal protection in the UK under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that dormice, and the places they use for shelter or protection, are capable of being a material consideration in the planning process. A summary of the legislation protecting the dormouse is included within Appendix 1. This section also provides some brief information on the ecology of dormouse from the Kent Local Biodiversity Action Plan (BAP).

This report assesses the suitability of the habitats on the site for dormouse and presents the findings of the monitoring survey.

1.2 Site Description and Context

Table 1.1 provides a brief summary of the site and its surroundings.

Attribute	Description
Location	Eastern Quarry, Swanscombe, Kent
National Grid Reference	TQ 595 735
Site Area (ha)	240
Topography	The topography of the site is undulating with flat areas in the centre of the site with steep, vegetated banks present along the boundaries of the site.
Land Cover (on site)	At the time of writing, the site, a former chalk quarry, was still under development with areas of completed residential and other infrastructure in its base. Steep cliffs between 20 m and 50 m high are located on the southern, western and north-western boundaries. Overburden forms artificial ground levels in the central and northern area of the site whilst the northern border, the cliff tops and a portion of the site in the east feature existing contours (EQ2 ES). The habitats presently occurring/establishing within the Eastern Quarry development site (internal area of the former quarry) include lakes/pools with marginal vegetation, ponds, bare/colonising ground with ephemeral and ruderal vegetation, scrub, and regenerating grassland.

Table 1.1: Summary of Site and Surroundings (continues)

Attribute	Description
Land Cover (on site; continued)	Areas of retained semi-natural broadleaved woodland and dense scrub are present along the boundaries of the site, with a significant area of woodland extending towards the centre of the site from the northern boundary. At the time of this survey, construction works were still in progress with housing, access roads and landscaping occupying large areas of the cleared development space.
Land Cover (site surrounds)	The site is bounded to the south by Watling Street, the A2 and the settlement of Bean, and to the north by the settlements of Swanscombe and Knockhall. The western boundary of the site, the B255 Bean Road, is located approximately 4.5 km from Dartford Town Centre and approximately 3 km from the M25 Dartford Crossing. The well-known retail park development 'Bluewater' is located in a second former quarry immediately to the west of the present study area, from which it is separated by the B255. The eastern boundary, represented by the B259 Southfleet Road, is approximately 500 m from Ebbsfleet International railway station and approximately 3.5 km from the centre of Gravesend. The Northwest Substation Site, located outside the site, forms the south-eastern boundary.

Table 1.1: Summary of Site and Surroundings (continued)

2. Methods

2.1 Dormouse Survey

Dormice are known to occur on site and have been monitored by Middlemarch since 2016. In May 2016, a habitat suitability assessment was conducted in order to establish target areas that indicated potential for supporting dormice. Following the identification of the habitats that were to be surveyed, the survey area was divided into twelve transects (A to L). Due to clearance works on site in the period since 2016, Transects E, F, H, I, J and L are no longer present. Two additional transects, SL and M, were added in 2022. All extant transects were subsequently renumbered in 2024, to align with the parcel numbering system used in the Natural England Development Licenses covering works affecting dormice on site. Three additional transects were added in August 2025. Table 2.1 provides a summary of extant transects.

Transect number	Former lettering system	Number of dormouse nest boxes
2	N/A	10
3	D	20
4	C	20
7	B	20
8		25
9	A	50
11	K	15
13	M	16
14	SL	11
15	G	40
16	N/A	30
17	N/A	10
DM Break	DM Break	Nest tubes only

Table 2.1: Summary of transects

The methodology used to conduct the nest survey follows the guidelines set out in the Natural England Dormouse Conservation Handbook (2nd edition; Bright *et al*., 2006). The survey involved erecting dormouse nest boxes and nest tubes within suitable habitats such as woodland, scrub and hedgerows. The boxes and tubes were distributed as evenly as possible, approximately every 20 m. In 2022, nest tubes on the transects in retained habitat areas were replaced by numbered nest boxes, as these are more suitable for long-term population monitoring (see Table 1 for number of boxes per transect). Transect locations are illustrated in Drawing C121456-EQ-2025-102-01 in Section 6.

Nest tube/box surveys can only be carried out between April and November and should be undertaken by an appropriately licensed ecologist.

Nest tube/box surveys were carried out between 10th April 2025 and 20th November 2025 by Indre Barsketyte (Principal Ecological Consultant – Natural England Dormouse Class Survey License no. 2016-26301-CLS-CLS), Jamie Fletcher (Principal Ecological Consultant – Natural England Dormouse Class Survey License no. 2017-31723-CLS-CLS), Charline Hue (Principal Ecological

Consultant – Natural England Dormouse Class Survey License no. 2016-26496-CLS-CLS), Jacob Kench (Principal Ecological Consultant), Arthur Jones (Senior Ecological Consultant), Matthew Fletcher (Field Ecologist), Ben Huxley (Ecological Field Officer), Nico Spaarkogel (Ecological Consultant), Ruby Hill (Ecological Consultant), and Isobel Shan (Ecological Field Officer). Weather conditions during the visits are detailed in Table 2.2.

Date	Cloud cover (%)	Air Temperature (°C)	Precipitation	Wind Speed (F)
10-04-2025	30	13	Nil	F2
15-05-2025	80	13	Nil	F3
26-06-2025	80	23	Nil	F4
31-07-2025	70	21	Nil – Light rain	F3
14-08-2025	0	27	Nil	F3
30-09-2025	0	19	Nil	F1
28-10-2025	30	15	Nil	F4
20-11-2025	100	5	Nil	F3

Table 2.2: Weather Conditions During Dormouse Survey Visits

2.2 Constraints

Several boxes on Transects 3, 9 and 15 became unsuitable during the year, predominantly through lid failure but also vandalism. Middlemarch considers the number of unsuitable boxes unlikely to have significantly biased the results.

2.3 Previous Surveys

Middlemarch undertook a dormouse survey along the hedgerows and woodland to the west of Southfleet Road and to the south of the entrance road for the Observatory between June and September 2015 (RT-MME-118887-EQ-05). These works were undertaken to support the planning application process for the construction of a new roundabout in this area. This survey recorded dormouse presence in 2015.

Furthermore, dormouse surveys undertaken by Middlemarch in 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023 and 2024 (RT-MME-121456-EQ-07, RT-MME-124612-EQ-04, RT-MME-121456-EQ-2018-07, RT-MME-121456-EQ-2019-03, RT-MME-121456-EQ-2020-02, RT-MME-121456-EQ-2021-102, RT-MME-121456-EQ-2022-102, RT-MME-121456-EQ-2023-102, and RT-MME-121456-EQ-2024-102) have also recorded the presence of dormice along the southern and northern boundaries of the site.

3. Survey Results

3.1 Assessment of Habitats

Middlemarch Environmental Drawing C121456-EQ-2025-102-01 in Section 6 shows the locations of the transects set within the habitats that were deemed suitable for dormice. The habitat types are discussed below.

Broadleaved Woodland

Broadleaved woodland was present along the northern, eastern and southern boundaries of the site and within Craylands Gorge to the north.

Northern Area (Transects 2, 3, 4, 13, 15, 16 and DM Break)

This area was dominated by young broad-leaved woodland and scrub, of which the dominant woody species were willow *Salix* sp., sycamore *Acer pseudoplatanus*, and birch *Betula* sp., with the understorey consisting of hazel *Corylus avellana*, bramble *Rubus fruticosus* agg., hawthorn *Crateagus monogyna* and common broom *Cytisus scoparius*. Some of the woodland, particularly around the western end of Transect 3 and the eastern end of Transect 15, was dominated by young oak *Quercus* sp., with occasional hornbeam *Carpinus betulus*.

Eastern Area (Transects 7 and 8)

The woodland patches in this area were also predominantly young broad-leaved woodland and scrub, of which the dominant woody species were willow and birch. The understorey was dominated by bramble, with occasional young hawthorn and hazel. One patch was instead dominated by mature Scots pine *Pinus sylvestris* with occasional hornbeam *Carpinus betulus*, and an understory mostly comprising bramble and hawthorn.

Southern Area (Transects 9, 11, 14 and 17)

The southern area was largely occupied by broad-leaved woodland interspersed with pockets of tall ruderal vegetation and scrub. The main woody species noted here comprised oak, ash *Fraxinus excelsior*, sweet chestnut *Castanea sativa*, hornbeam, birch and sycamore with an understorey of common gorse *Ulex europaeus*, bramble, hazel and honeysuckle *Lonicera periclymenum*.

Scrub

Scrub was present within the understorey of much of the broadleaved woodland on site, with commonly found species including bramble and hazel. Common gorse was also recorded in large quantities within the Southern Area, which is useful for nesting dormice. Introduced shrub, predominantly in the form of Butterfly bush *Buddleia davidii* was also present amongst the scrub, particularly in the west and southwest of the site. These scrub areas are less suitable for dormice as a result, because introduced shrub represents sub-optimal dormouse habitat.

3.2 Summary of Habitats – Value to Dormice

Northern Area (Transects 2, 3, 4, 13, 15, 16 and DM Break)

The northern area provides relevant resources to support dormice. Areas of broad-leaved woodland, particularly where a dense understorey is available, and areas of dense scrub provide suitable nesting, foraging and hibernation habitat. There is sufficient plant diversity, and abundant hazel accessible to dormice, in these woodland areas to provide year-round food sources.

Eastern Area (Transects 7 and 8)

The patches of woodland in the eastern area provide relevant resources to support dormice but are generally less suitable than in the other areas. The main resource here is dense bramble scrub in the understorey; however, the plant diversity is limited, with few mature hazel stands. The structure of the woodland patches is also less suitable, being mainly composed of tall willow and birch that lack side branches which could facilitate arboreal movements by dormice. The woodland patches also lack significant connectivity to each other in some cases, and connectivity to the northern and southern areas.

Southern Area (Transects 9, 11, 14 and 17)

Similarly to the northern area, the southern area also provides relevant resources to support dormice. Areas of broad-leaved woodland, particularly where a dense understorey is available, provide suitable nesting, foraging and hibernation habitat. There is sufficient plant diversity, and relatively abundant hazel accessible to dormice, in these woodland areas to provide year-round food sources. However, compared to the northern area, the understorey in some sections of the southern area woodlands is relatively sparse. These sections may become unsuitable for dormouse without management works.

As mentioned above, there is very limited connectivity between the northern, eastern and southern areas. Connectivity between the northern and southern areas along the western boundary is likely prevented by the dominance of introduced shrub, which is deemed suboptimal habitat for dormice. There is however connectivity between the 2015 dormouse records along the Observatory Road and the southern survey area.

Due to the presence of suitable nesting, sheltering and hibernating habitat, and abundant food sources, the habitats within the site are considered to be of high value to dormice.

3.3 Summary of Results

The results of the dormouse transects are detailed in Table 3.1. The location of the transects are plotted on Drawing C121456-EQ-2025-102-01 at the end of this report.

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 2									**No**
Box 1	-	-	-	-	-	Empty	Empty	Empty	No
Box 2	-	-	-	-	-	Empty	Empty	Empty	No
Box 3	-	-	-	-	-	Empty	Empty	Empty	No
Box 4	-	-	-	-	-	Empty	Empty	Empty	No
Box 5	-	-	-	-	-	Empty	Empty	Empty	No
Box 6	-	-	-	-	-	Empty	Empty	Empty	No
Box 7	-	-	-	-	-	Empty	Empty	Empty	No
Box 8	-	-	-	-	-	Empty	Empty	Empty	No
Box 9	-	-	-	-	-	Empty	Empty	Empty	No
Box 10	-	-	-	-	-	Empty	Empty	Empty	No
Transect 3 (continues)									**Yes**
Box 1	Empty	Empty	Missing	Missing	Missing	Missing	Missing	Missing	No
Box 2	Empty	Empty	**Adult M, A, TS, 22 g. Nest**	**Empty dormouse nest**	**Remains of dormouse nest**	**Juv F, A, 18.5 g. Nest**	**Adult, A. Nest**	**Empty dormouse nest**	**Yes**
Box 3	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Adult F, A, L, 21.5 g. 5 Pinks, 3 g each. Nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 4	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 5	Empty	Empty	Empty	Empty	**Start of dormouse nest**	**Empty dormouse nest**	**Adult, A. Nest**	**Empty dormouse nest**	**Yes**
Box 6	Empty	Bird's nest	Old bird's nest	Empty	Empty	Empty	**Adult, A. Nest**	**Adult F, A, 15 g. Nest**	**Yes**
Box 7	Empty	Empty	**Juv F, A, 16 g. Juv M, A, 13 g. Nest**	**Active dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 3 (continued)									
Box 8	Empty	Bird's nest	Old bird's nest	Empty	Empty	**Adult F, A, L, 25.5 g, white tail tip. Unknown number of young. Nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 9	Empty	Empty	**Adult, A**	**Adult F, A. Unknown number of young. Nest**	**Empty dormouse nest.**	**Empty dormouse nest.**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 10	Empty	Empty	Empty	Empty	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Transect 4 (Compartment 5; continues)									**Yes**
Box 1	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 2	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	No
Box 3	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 4	Empty	Empty	Empty	Empty	Empty	Wood mouse nest & nut cache	Wood mouse nest & nut cache	Wood mouse nest & nut cache	No
Box 5	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 6	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 7	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 8	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 9	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 10	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 11	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 12	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 4 (Compartment 5; continued)									
Box 13	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 14	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 15	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 16	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 17	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 18	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 19	Empty	Empty	**Adult M, A, TS, 20.5 g**	Empty	Empty	Empty	Empty	Empty	**Yes**
Box 20	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Transect 7 (continues)									**Yes**
Box 1	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 2	Empty	Empty	Bird's nest	Old bird's nest	Empty	Empty	Empty	Empty	No
Box 3	Empty	Bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	No
Box 4	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Adult M, A, TS, 18 g. Nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 5	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 6	Empty	Empty	Bird's nest	Old bird's nest	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest, colonised by wood mouse**	**Empty dormouse nest, colonised by wood mouse**	**Yes**
Box 7	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 8	Empty	Empty	Empty	Empty	Empty	Empty	**Active dormouse nest**	**Empty dormouse nest**	**Yes**
Box 9	Empty	Empty	Empty	Empty	Empty	Empty	**Active dormouse nest**	**Adult M, A, 25 g. Nest**	**Yes**

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 7 (continues)									
Box 10	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 11	Empty	Empty	Empty	Empty wood mouse nest	**Empty dormouse nest**	**Empty dormouse nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Yes**
Box 12	Empty	Empty	Potential start of dormouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Uncertain
Box 13	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 14	Empty	Empty	Empty	Empty wood mouse nest	**Adult F, A, L, 21.5 g. Juv F, A, 7.5 g. Juv F, A, 8 g. Juv F, A, 8.5 g. Juv F, A, 8 g. Juv M, A, 8.5 g. Nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 15	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	**Min. 2 active dormice. Nest**	**Empty dormouse nest**	**Yes**
Box 16	Empty	Empty	**Juv, A. Nest**	**Empty dormouse nest**	**Empty dormouse nest, modified**	**Empty dormouse nest, modified**	**Empty dormouse nest, modified**	**Empty dormouse nest, modified**	**Yes**
Box 17	Empty	Empty	Empty	Empty	Empty	Empty	Empty	**Empty dormouse nest**	**Yes**
Box 18	Empty	Empty	Empty	Empty	**Adult M, A, 18 g**	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 19	Empty	Empty	Empty	Empty	Empty	Empty	**Active dormouse nest**	**Adult, A. Nest**	**Yes**

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 7 (continued)									
Box 20	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	**Empty dormouse nest**	**Empty dormouse nest**	**Active dormouse nest**	**Adult, A. Nest**	**Yes**
Transect 8 (continues)									**Yes**
Box 1	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 2	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	No
Box 3	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 4	Empty	Empty	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Yes**
Box 5	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 6	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 7	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	No
Box 8	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 9	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 10	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 11	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 12	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 13	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	No
Box 14	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	No
Box 15	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	No
Box 16	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	**Start of dormouse nest**	**Start of dormouse nest**	**Yes**
Box 17	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 18	Empty	Empty	Empty	Old bird's nest	Old bird's nest	Empty	Empty	Empty	No

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 8 (continued)									
Box 19	Empty	Bird's nest	Old bird's nest	Old bird's nest	Potential dormouse nest	Potential dormouse nest	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 20	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 21	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 22	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 23	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	No
Box 24	Empty	Bird's nest	Old bird's nest	Old bird's nest	**Active dormouse nest**	**Empty dormouse nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Yes**
Box 25	Empty	Empty	Empty	Empty	Potential dormouse nest	Potential dormouse nest	Potential dormouse nest	Potential dormouse nest	Uncertain
Transect 9 (continues)									**Yes**
Box 1	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Adult F, A, L. >3 Pinks. Nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Yes**
Box 2	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 3	Empty	Empty	Empty	Old bird's nest with shrew	Old bird's nest with mammal droppings	Old bird's nest with mammal droppings		Empty wood mouse nest	No
Box 4	Bird's nest	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	No
Box 5	Empty	Empty	Empty	Active wood mouse nest	Empty wood mouse nest	Active wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	No

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 9 (continues)									
Box 6	Empty	Bird's nest	Old bird's nest	Old bird's nest	**Active dormouse nest**	**Adult F, A, L, 23 g. Juv M, A, 13 g. Juv M, A, 13 g. Juv F, A, 13 g. Juv F, A, 12.5 g. Juv F, A, 13 g. Nest**	**Empty dormouse nest**	**Empty dormouse nest, colonised by shrew**	**Yes**
Box 7	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Start of wood mouse / yellow-necked mouse nest	No
Box 8	Empty	Empty	**Empty dormouse nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Yes**
Box 9	Empty	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 10	Empty	Empty	Start of wood mouse nest	Start of wood mouse nest	Start of wood mouse nest	Start of wood mouse nest	Empty wood mouse nest	Active wood mouse nest	No
Box 11	Empty	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	**Empty dormouse nest**	Empty wood mouse nest	Empty wood mouse nest	**Yes**
Box 12	Empty	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest, colonised by wood mouse**	**Yes**
Box 13	Bird's nest	Bird's nest	Old bird's nest	Old bird's nest	**Start of dormouse nest with wood mouse**	**Start of dormouse nest**	**Start of dormouse nest**	**Start of dormouse nest**	**Yes**

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 9 (continues)									
Box 14	Empty	Start of bird's nest	Start of bird's nest	Start of bird's nest	Start of bird's nest	Start of bird's nest	Empty	Empty	No
Box 15	Empty	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 16	Empty	Active blue tit nest	Active blue tit nest	Old bird's nest	Empty	Empty	Empty	Empty	No
Box 17	Empty	Active blue tit nest	Active blue tit nest	**Active dormouse net**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 18	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	No
Box 19	Bird's nest	Bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	Empty	No
Box 20	Empty	Empty	Active blue tit nest	Predated blue tit nest	Old blue tit nest	Old blue tit nest	Old blue tit nest	Empty	No
Box 21	Empty	Empty	Empty	Empty	Empty	Empty	**Active dormouse nest**	**Empty dormouse nest**	**Yes**
Box 22	Empty	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 23	Empty	Bird's nest	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 24	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 25	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 26	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 27	Empty	Active blue tit nest	Active blue tit nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 28	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Remains of wood mouse nest	Remains of wood mouse nest	No

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 9 (continued)									
Box 29	Empty	Bird's nest	Old bird's nest	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Remains of dormouse nest**	**Remains of dormouse nest**	**Yes**
Box 30	Empty	Active blue tit nest	Active blue tit nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 31	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 32	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 33	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Wood mouse cache	Empty	No
Box 34	Empty	Empty wood mouse nest	Beehive	Old beehive	Old beehive	Old beehive	Old beehive	Empty	No
Box 35	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 36	Empty	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	No
Box 37	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 38	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	**Dormouse nest, colonised**	**Dormouse nest, colonised**	**Yes**
Box 39	Bird's nest	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 40	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 41	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 42	Empty	Bird's nest	Old bird's nest	Old bird's nest	**Dormouse, A**	**Empty dormouse nest**	**Empty dormouse nest, colonised by wood mouse**	**Remains of dormouse nest**	**Yes**
Transect 11 (Compartment 10 and 11; continues)									**Yes**
Box 1	Empty	Empty	Empty	Empty	Potential start of dormouse nest	Potential start of dormouse nest	**Start of dormouse nest**	**Start of dormouse nest**	**Yes**

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 11 (Compartment 10 and 11; continues)									
Box 2	Empty	Empty	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 3	Empty	Empty	Empty	Empty	Empty	Empty	**Active dormouse nest**	Empty wood mouse nest	**Yes**
Box 4	Empty	Empty	Empty	Empty	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 5	Empty	Empty	Empty	Empty	Empty	Empty	**Adult, A. Nest**	**Empty dormouse nest**	**Yes**
Box 6	Empty	Empty	Empty	Empty	Empty	Empty	Potential start of dormouse nest	Empty wood mouse nest	Uncertain
Box 7	Empty	Empty	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	No
Box 8	Empty	Empty	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	**Empty dormouse nest**	**Yes**
Box 9	Empty	Empty	Empty	Empty	Empty	Empty	Start of wood mouse nest	**Adult, A. Nest**	**Yes**
Box 10	Empty	Empty	Empty	Empty	Empty	Empty	Empty	**Empty dormouse nest**	**Yes**
Box 11	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Start of wood mouse nest	No
Box 12	Empty	Empty	Empty	Wood mouse nest with 2 wood mice	Empty wood mouse nest	**Start of dormouse nest**	**Empty dormouse nest, colonised by wood mouse**	**Empty dormouse nest, colonised by wood mouse**	**Yes**

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 11 (Compartment 10 and 11; continued)									
Box 13	Empty	Bird's nest	Old bird's nest	Old bird's nest with wood mouse	Old bird's nest	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest, colonised by shrew**	**Yes**
Box 14	Empty	Empty	Empty	**Active dormouse nest**	**Active dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Remains of dormouse nest**	**Yes**
Box 15	Empty	Empty	Empty	Empty	Wood mouse nest with wood mouse	Empty wood mouse nest	Empty wood mouse nest	Empty wood mouse nest	No
Transect 13 (continues)									**Uncertain**
Box 1	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 2	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 3	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 4	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 5	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 6	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 7	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 8	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 9	Empty	Empty	Empty	Empty	Wood mouse cache	Wood mouse cache	Empty	Empty	No
Box 10	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	No
Box 11	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	No
Box 12	Empty	Empty	Empty	Empty	Wood mouse cache	Wood mouse cache	Empty	Empty	No
Box 13	Empty	Empty	Empty	Empty	Wood mouse cache	Wood mouse cache	Wood mouse cache	Wood mouse cache	No
Box 14	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 13 (continued)									
Box 15	Empty	Empty	Empty	Empty	Empty	Potential start of dormouse nest	Potential start of dormouse nest	Potential start of dormouse nest	Uncertain
Box 16	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Transect 14									**Yes**
Box 1	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 2	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 3	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 4	Empty	Bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	Empty	No
Box 5	Empty	Bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	Empty	No
Box 6	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 7	Empty	Bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty	Empty	No
Box 8	Empty	Empty	Empty	Empty	**Adult M, A, 20 g. Nest**	**Empty dormouse nest**	**Active dormouse nest**	**Empty dormouse nest**	**Yes**
Box 9	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 10	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 11	Empty	Empty	Empty	Empty	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	No
Transect 15 (continues)									**Yes**
Box 1	Empty	Empty	Empty	Empty	Empty	Empty	Active wood mouse nest	Empty wood mouse nest	No
Box 2	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 3	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 4	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 5	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 6	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 7	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 15 (continues)									
Box 8	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 9	Empty	Empty	Active blue tit nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 10	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 11	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 12	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	Empty wood mouse / yellow-necked mouse nest	No
Box 13	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 14	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 15	Empty	Empty	Empty	**Empty dormouse nest**	**5 Juv, A. Nest**	**Empty dormouse nest**	**Min. 1 Juv, A. Nest**	**Empty dormouse nest**	**Yes**
Box 16	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 17	Empty	Active blue tit nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 18	Empty	Empty	Bird's nest	Old bird's nest	Old bird's nest	Yellow-necked mouse nest with adult	Empty yellow-necked mouse nest	Empty yellow-necked mouse nest	No
Box 19	Empty	Empty	Empty	Empty	Empty	**Juv F, A, 13 g. Nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**
Box 20	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 21	Empty	Empty	Active blue tit nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 22	Empty	Empty	Empty	Empty	Empty	Wood mouse nest with 2 M	Remains of wood mouse nest	Remains of wood mouse nest	No

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 15 (continues)									
Box 23	Empty	Empty	Empty	Empty	Empty	Empty	**Start of dormouse nest**	**Start of dormouse nest**	**Yes**
Box 24	Empty	Empty	Empty	Empty	Empty	Potential start of dormouse nest	**Juv, A. Nest**	**Empty dormouse nest**	**Yes**
Box 25	Empty	Empty	Empty	Empty	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	No
Box 26	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 27	Empty	Empty	Hornet's nest	Old hornet's nest	Old hornet's nest	Old hornet's nest	Empty	Empty	No
Box 28	Empty	Empty	Empty	**Adult, A. Nest**	**Active dormouse nest**	**Juv F, A, 18 g. Nest**	**Active dormouse nest**	**Empty dormouse nest**	**Yes**
Box 29	Empty	Empty	Bees nest	Empty	Empty	Empty	Active wood mouse nest with 2 mice	Empty wood mouse nest	No
Box 30	Empty	Empty	Empty	Empty	Empty wood mouse nest	Empty wood mouse nest	wood mouse / yellow-necked mouse nest	Remains of wood mouse / yellow-necked mouse nest	No
Box 31	Empty	Empty	Active blue tit nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 32	Empty	Empty	Empty	Empty	Empty	**Active dormouse nest**	**Active dormouse nest**	**Empty dormouse nest**	**Yes**
Box 33	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Missing	Empty wood mouse nest	Empty wood mouse nest	No
Box 34	Empty	Empty	Empty	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Empty dormouse nest**	**Yes**

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 15 (continued)									
Box 35	Empty	Empty	Empty	Empty	Empty	Old bees' nest, colonised by shrew	Old bees' nest, colonised by shrew	Old bees' nest, colonised by shrew	No
Box 36	Empty	Bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	Old bird's nest	**Active dormouse nest**	**Empty dormouse nest**	**Yes**
Box 37	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 38	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Box 39	Empty	Empty	Active blue tit nest	Old bird's nest	Old bird's nest	Old bird's nest	Empty	Empty	No
Box 40	Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty	No
Transect 16 (continues)									**No**
Box 1	-	-	-	-	-	Empty	Empty	Empty	No
Box 2	-	-	-	-	-	Empty	Empty	Empty	No
Box 3	-	-	-	-	-	Empty	Empty	Empty	No
Box 4	-	-	-	-	-	Empty	Empty	Empty	No
Box 5	-	-	-	-	-	Empty	Empty	Empty	No
Box 6	-	-	-	-	-	Empty	Empty	Empty	No
Box 7	-	-	-	-	-	Empty	Empty	Empty	No
Box 8	-	-	-	-	-	Empty	Empty	Empty	No
Box 9	-	-	-	-	-	Empty	Empty	Empty	No
Box 10	-	-	-	-	-	Empty	Empty	Empty	No
Box 11	-	-	-	-	-	Empty	Empty	Empty	No
Box 12	-	-	-	-	-	Empty	Empty	Empty	No
Box 13	-	-	-	-	-	Empty	Empty	Empty	No
Box 14	-	-	-	-	-	Empty	Empty	Empty	No
Box 15	-	-	-	-	-	Empty	Empty	Empty	No
Box 16	-	-	-	-	-	Empty	Empty	Empty	No

Table 3.1: Dormouse Survey Results (continues)

Box Number	Month of Survey								Dormouse Present?
	April	May	June	July	August	September	October	November	
Transect 16 (continued)									
Box 17	-	-	-	-	-	Empty	Empty	Empty	No
Box 18	-	-	-	-	-	Empty	Empty	Empty	No
Box 19	-	-	-	-	-	Empty	Empty	Empty	No
Box 20	-	-	-	-	-	Empty	Empty	Empty	No
Box 21	-	-	-	-	-	Empty	Empty	Empty	No
Box 22	-	-	-	-	-	Empty	Empty	Empty	No
Box 23	-	-	-	-	-	Empty	Empty	Empty	No
Box 24	-	-	-	-	-	Empty	Empty	Empty	No
Box 25	-	-	-	-	-	Empty	Empty	Empty	No
Box 26	-	-	-	-	-	Empty	Empty	Empty	No
Box 27	-	-	-	-	-	Empty	Empty	Empty	No
Box 28	-	-	-	-	-	Empty	Empty	Empty	No
Box 29	-	-	-	-	-	Empty	Empty	Empty	No
Box 30	-	-	-	-	-	Empty	Empty	Empty	No
Transect 17									**No**
Box 1	-	-	-	-	-	Empty	Empty	Empty	No
Box 2	-	-	-	-	-	Empty	Empty	Empty	No
Box 3	-	-	-	-	-	Empty	Empty	Empty	No
Box 4	-	-	-	-	-	Empty	Empty	Empty	No
Box 5	-	-	-	-	-	Empty	Empty	Empty	No
Box 6	-	-	-	-	-	Empty	Empty	Empty	No
Box 7	-	-	-	-	-	Empty	Empty	Empty	No
Box 8	-	-	-	-	-	Empty	Empty	Empty	No
Box 9	-	-	-	-	-	Empty	Empty	Empty	No
Box 10	-	-	-	-	-	Empty	Empty	Empty	No

Table 3.1: Dormouse Survey Results (continues)

Total usable nests	**0**	**0**	**7**	**16**	**24**	**32**	**39**	**38**	
Total dormice	**0**	**0**	**6**	**Min. 6**	**Min. 25**	**Min. 16**	**Min. 18**	**5**	

Key:
Adult: dormouse has survived at least one winter
Pink: new born with no sign of fur
GEC: grey fur and eyes still closed
EO: eyes open, grey/brown fur, not weaned
Juv: independent juvenile i.e. young of the year

M: male
F: female

A: active
T: torpid
D: dead

TS: male with testes scrotal (breeding condition)
P: pregnant female
L: lactating female
PL: female post-lactation, sometimes without young
NB: non-breeding

Table 3.1: Dormouse Survey Results (continued)

4. Discussion and Conclusions

4.1 Habitat Assessment

Since dormice were first discovered on site in 2015 the site has changed significantly. Areas of mature habitat including broadleaved woodland and scrub still line both the northern and southern boundaries of the site and in places have been expanded with the creation of newly formed greenspace. However, naturally regenerated areas of woodland and scrub linking the northern and southern habitat on site have been lost under licence to complete ground levelling works associated with the development. North-south links are again being created in the green space through planting of woodland blocks, hedgerows and scrub thickets. Ongoing dormouse surveys have found populations utilising the newly created habitat and expanding their range across site. However, connectivity between habitat parcels on site remains low and the fragmented nature of the habitat on site leaves the metapopulation vulnerable to collapse.

4.2 Findings of Dormouse Survey

Dormice continue to be present on site, with a significant population recorded during the survey visits between April and November 2025.

Areas with dormouse presence recorded

Within the Northern Area of the site, dormice were recorded on the following transects:

- Transect 3
- Transect 4
- Transect 15
- DM Break

Within the Eastern Area, dormice were recorded on the following transects:

- Transect 7
- Transect 8

Within the Southern Area, dormice were recorded on the following transects:

- Transect 9
- Transect 11
- Transect 14

Areas without dormouse presence recorded

Within the Northern Area of the site, dormice were not recorded on the following transects:

- Transect 2
- Transect 13
- Transect 16

Within the Southern Area, dormice were not recorded on the following transects:

- Transect 17

Transects 2, 16 and 17 were only established in August and had not yet been utilised by dormice. This should not be taken as an indication that dormice are absent from these areas.

The peak number of dormice was recorded in August, with at least 25 individual dormice found across the site during the August survey.

Transect 3 continued to be the most densely populated transect, as in previous years, with 8 out of 10 dormouse boxes utilised at some stage in the year. Three adults were recorded in October, and at least one female successfully bred.

Transect 4 was restocked with new nest boxes before the 2025 survey season began and appears to not yet have been colonised, although a single male without a nest was found in a box at the eastern end of the transect in June. This individual may have dispersed across the B259 Southfleet Road from off-site habitat to the east, and represents the first time that a dormouse has been recorded on the transect.

Transect 7 had no records of dormice in 2024, despite the species previously being present. As a result, the transect was also restocked with new nest boxes before the 2025 survey season began. The lack of records in 2024 appears to have been due to the lack of usable boxes, as dormice were once more recorded during the 2025 surveys. At least two adult males and an adult female were present on the transect, with the female successfully breeding.

Transect 8 similarly had no records of dormice in 2024, despite the species previously being present, and was also restocked with nest boxes before the 2025 survey season began. Dormice were subsequently recorded during the 2025 surveys. One active dormouse and two nests were recorded near where Transects 7 and 8 overlap at the top of the eastern escarpment, with a further two nests recorded at the base of the escarpment. The latter result had not occurred in previous years of monitoring.

Transect 9 was also restocked with nest boxes, and boxes were reinforced against grey squirrel *Sciurus carolinensis.* The transect continued to support dormice, with the majority of findings concentrated within the western half of the transect; the habitat here was theoretically more suitable than in the eastern half, with a greater resource of hazel and dense scrub structures. The number of dormouse findings was generally higher than in 2024, which may be explained by the increase in usable nest boxes, and/or reduced grey squirrel predation. At least two adult females were present on the transect, with both females successfully breeding, although one litter may subsequently have been predated by wood mouse.

Transect 11 had dormouse nests in the majority of nest boxes, with at least two dormice recorded. This represents an increase of activity compared to 2024.

Transect 13 had no certain signs of dormouse activity. This is a significant reduction compared to 2022, 2023 and 2024, when multiple dormice were reliably recorded. The reason for this result is unclear, particularly because the suitability of the habitat has not noticeably changed and nest boxes were all functional throughout the survey period.

Transect 14 continued to support dormice, after the first reliable confirmation of their presence on the transect in 2024. However, there was a reduction in activity recorded compared to 2024, with a single nest box utilised by an adult male.

Transect 15 continued to support dormice, with 8 of the 40 boxes utilised by dormice at some stage in the year. Six active dormice were recorded in August, of which five were juveniles, indicating that successful breeding had occurred earlier in the year.

Finally, the DM Break also continued to support dormice, with several tubes occupied by nests and at least two dormice present.

4.3 Conclusions and Summary of Potential Impacts

There continued to be a highly significant metapopulation of dormice on site in 2025. Breeding success was recorded on four of the ten extant transects. Individual populations along the various

transects, apart from Transect 13, appeared to be largely stable in comparison with previous years. However, statistically significant trends cannot yet be calculated.

Licensed vegetation clearance across the site in previous years to facilitate the development has significantly reduced the foraging and nesting opportunities for dormice within the site. As a result, dormice have been relegated to the habitats along the northern, eastern and southern boundaries of the site. Several of these habitat areas, particularly at Transects 3, 4, 7, 8 and 13, are small and poorly connected to larger areas of suitable habitat. The retention and strengthening of existing connections, and the creation of new ones, must therefore be the highest priority.

Efforts to improve the connection between Transects 3 and 4 to Transect 15 along the northern boundary through planting have been made and as the planting further establishes this link should become more suitable. However, the connections from Transects 7 and 8 to Transects 9 and 14 along the eastern boundary should be strengthened with further planting. It is also imperative that the woodland corridor between Transect 13 and Transect 15 is maintained and managed according to dormouse habitat requirements, and that planting in the new lake Koba area, which will further link the two transects, should be completed as soon as possible. This is particularly crucial in light of the lack of dormouse findings on Transect 13 during the 2025 surveys, which may reflect the loss of the population in this area. If this is indeed the case, it highlights the vulnerability of the remaining dormice populations on site to random local extinctions through stochastic environmental factors, and underlines the importance of creating a functioning, connected metapopulation.

Habitat improvement works should continue along all transects, with a particular focus on improving Transect 15 in the areas where the woodland is beginning to age out of being suitable, along with the western end of Transect 14 where food resources and dense vegetation structure are missing. As part of these improvement works and to support breeding success, nest boxes should be repositioned if the habitat they are in is no longer suitable, particularly in the woodland areas with sparse understorey to the east of Transect 9. Furthermore, the creation of suitable compensatory habitat to mitigate for the losses of existing habitat, as required by the Natural England Development Licenses applicable to the site, must be conducted in a timely and effective manner. These measures will help reduce the likelihood that the carrying capacity of habitat areas is reached, with consequent crashes of the associated dormouse populations.

Several dormouse nests were again recorded on the Dormouse Break (DM Break) transect. The associated area of vegetation is planned for clearance, which must therefore only be undertaken with a Natural England Development Licence. At the time of writing (December 2025) a licence application is with Natural England and under review. Following clearance, the replanting work should be undertaken as soon as possible through the Major Urban Park to increase the habitat carrying capacity and thus better accommodate any dormice dispersing from Transect DM Break.

Finally, any further dormouse habitat loss in other areas of the site could potentially lead to dormouse disturbance, injury or death during vegetation clearance if sensitive working methods are not in place. Full recommendations are provided in Section 5.

5. Recommendations

All recommendations provided in this section are based on Middlemarch Environmental Ltd's current understanding of the site, correct at the time the report was compiled. In order to maintain and enhance the ecological value of the Eastern Quarry site for dormice populations, the following recommendations have been made:

R1 As dormouse have been recorded, no works should be undertaken which would breach the legislation outlined in Appendix 1.

R2 Where vegetation clearance is needed on site, works will be subject to a detailed review of the impacts. If impacts on dormice are considered possible, a Natural England European Protected Species Licence will be required. The Method Statement within the licence will detail the mitigation strategy to ensure no dormice are harmed during the proposed development. This strategy will also ensure that the conservation status of this species in the local area is not adversely impacted by the proposals.

R3 Monitoring works should continue as part of the implementation of the Biodiversity Action Plan Monitoring and Management Plan for the site. The exact scale and timings of the surveys will be reviewed for 2026. It is recommended that Swanscombe Heritage Park and Western Cross Farm are included within the survey area for 2026.

R4 Further compensatory dormouse habitat creation should be undertaken on site in line with the Natural England site licence. This will help to increase connectivity between habitats, improve overall habitat suitability and compensate for the loss of former or existing areas of suitable habitat subject to previous or future clearance/development. All compensatory habitat creation should be completed as far in advance of the clearance of areas of suitable habitat as possible, so that plants have time to establish and improve habitat suitability.

R5 Management programmes as listed in the Parcel Biodiversity Action Plans (known as Mini BAP documents) should be followed to ensure management of woodland and scrub on site is ongoing. This includes selective felling and replanting, rotational coppice and general management to ensure the areas provide suitable habitat for dormice and as broad a range of other species as possible through creation varied age structure.

R6 Native species-rich hedgerows should be planted on site wherever possible including species such as hazel, hawthorn, blackthorn, holly, yew, guelder rose, field maple, spindle, wild privet dogwood and buckthorn. Native species-rich hedgerows will be used by dormice and a wide range of other species in order to nest, feed, shelter and hibernate.

R7 Native plant species should be incorporated into landscaping designs, including gardens, amenity and recreational space, street trees and shrub borders, which adjoin areas of existing habitat that is known to or has the potential to support dormice. Native tree species could include English oak, beech, crab apple, wild cherry, wild service, rowan and whitebeam. Native border/shrub species could include dogwood, hazel, wayfaring tree, dog rose, gorse, spindle, wild privet and guelder rose. Native plant species will be used by dormice and a wide range of other species in order to nest, feed, shelter and hibernate.

R8 Site designs should ensure existing areas of habitat known to support, or that are suitable for, dormice remain connected in order not to fragment existing dormouse populations and habitats. If possible, connections should be made to suitable off-site habitat as well. This

may include the implementation of habitat bridges over barriers such as roads, car parks or buildings.

R9 Several dormouse boxes on Transects 3, 9 and 15 became unsuitable during the year. A total of 10 replacement boxes should be sourced and set out. This work is necessary to ensure survey effort remains the same and survey results remain comparable between years.

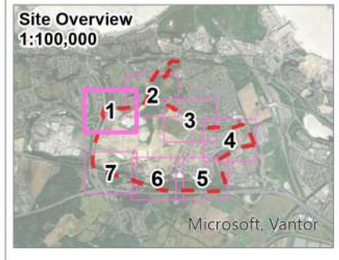
6. Drawings

Drawing C121456-EQ-2025-102-01 – Transects

C121456-EQ-2025-102-01

Legend

- Site boundary
- Dormouse box location
- # Evidence of dormouse present
- # No evidence of dormouse present



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Project
Eastern Quarry

Drawing
Dormouse Results 2025 - Page 1 of 7

Client
Camland

Drawing Number	Revision
C121456-EQ-2025-102-01	00
Scale @ A3	Date
1:2,500	December 2025
Approved By	Drawn By
NS	VO

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E:admin@middlemarch-environmental.com

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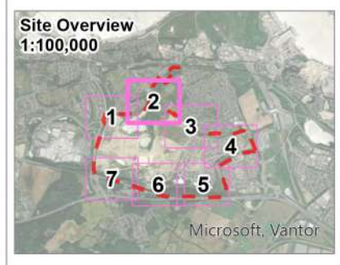
C121456-EQ-2025-102-01

Legend

- Site boundary
- Dormouse box location
- # Evidence of dormouse present
- # No evidence of dormouse present



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Project	Eastern Quarry
Drawing	Dormouse Results 2025 - Page 2 of 7
Client	Camland
Drawing Number: C121456-EQ-2025-102-01	Revision: 00
Scale @ A3: 1:2,500	Date: December 2025
Approved By: NS	Drawn By: VO

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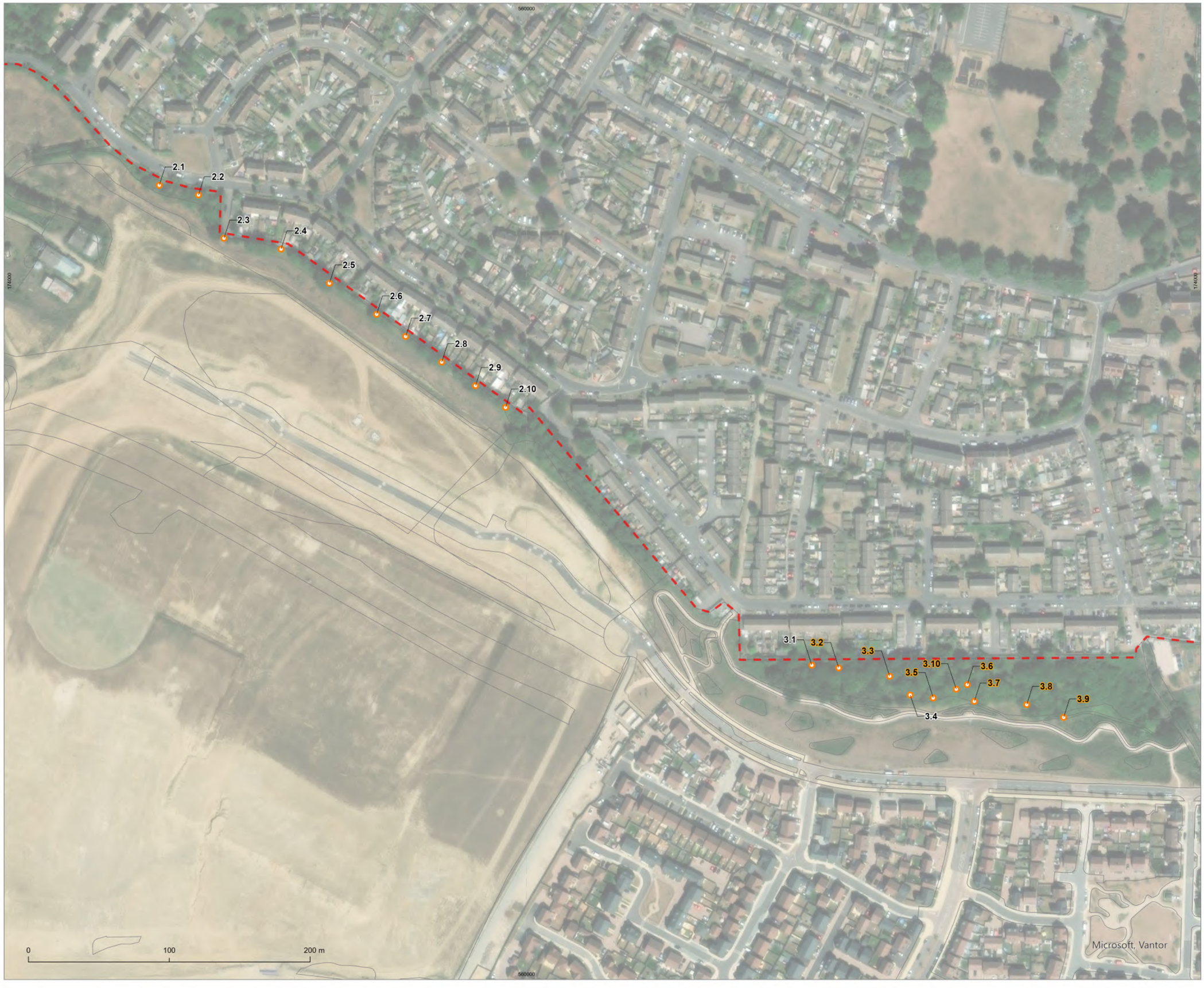
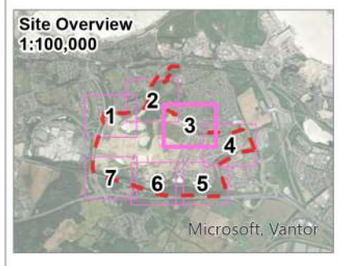


C121456-EQ-2025-102-01

Legend

- Site boundary
- Dormouse box location
- # Evidence of dormouse present
- # No evidence of dormouse present



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Project	Eastern Quarry
Drawing	Dormouse Results 2025 - Page 3 of 7
Client	Camland
Drawing Number: C121456-EQ-2025-102-01	Revision: 00
Scale @ A3: 1:2,500	Date: December 2025
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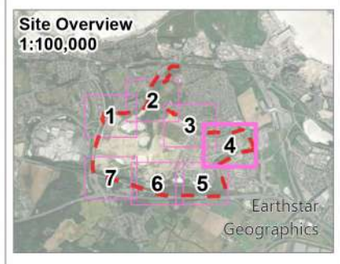
C121456-EQ-2025-102-01

Legend

- Site boundary
- Dormouse box location
- # Evidence of dormouse present
- # No evidence of dormouse present



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Project	Eastern Quarry
Drawing	Dormouse Results 2025 - Page 4 of 7
Client	Camland
Drawing Number: C121456-EQ-2025-102-01	Revision: 00
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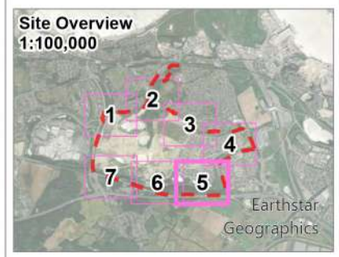
C121456-EQ-2025-102-01

Legend

- Site boundary
- Dormouse box location
- # Evidence of dormouse present
- # No evidence of dormouse present



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Project	Eastern Quarry
Drawing	Dormouse Results 2025 - Page 5 of 7
Client	Camland
Drawing Number: C121456-EQ-2025-102-01	Revision: 00
Scale @ A3: 1:2,500	Date: December 2025
Approved By: NS	Drawn By: VO

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Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T:01676 525880
E:admin@middlemarch-environmental.com

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C121456-EQ-2025-102-01

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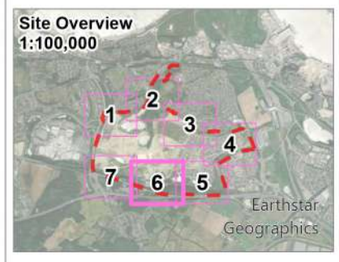

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Project	Eastern Quarry
Drawing	Dormouse Results 2025 - Page 6 of 7
Client	Camland
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Legend

- Site boundary
- Dormouse box location
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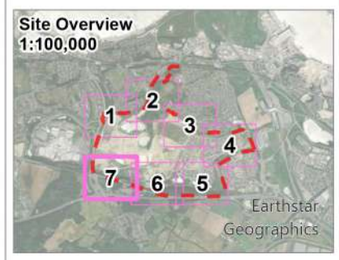

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Project	Eastern Quarry
Drawing	Dormouse Results 2025 - Page 7 of 7
Client	Camland
Drawing Number: C121456-EQ-2025-102-01	Revision: 00
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Appendix 1

Relevant Legislation

Dormice and the places they use for shelter or protection receive European protection under The Conservation of Habitats and Species Regulations 2010 (Habitats Regulations 2010). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that dormice, and the places they use for shelter or protection, are capable of being a material consideration in the planning process.

Regulation 41 of the Habitats Regulations 2010, states that a person commits an offence if they:

- deliberately capture, injure or kill a dormouse;
- deliberately disturb dormice; or
- damage or destroy a breeding site or resting place.

Disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong. It is an offence under the Habitats Regulations 2010 for any person to have in his possession or control, to transport, to sell or exchange or to offer for sale, any live or dead dormouse, part of a dormouse or anything derived from a dormouse, which has been unlawfully taken from the wild.

Whilst broadly similar to the above legislation, the WCA 1981 (as amended) differs in the following ways:

- Section 9(1) of the WCA makes it an offence to intentionally (rather than deliberately) kill, injure or take any protected species.
- Section 9(4)(a) of the WCA makes it an offence to intentionally or recklessly* damage or destroy, *or obstruct access to*, any structure or place which a protected species uses for shelter or protection.
- Section 9(4)(b) of the WCA makes it an offence to intentionally or recklessly* disturb any protected species *while it is occupying a structure or place which it uses for shelter or protection*.

*Reckless offences were added by the Countryside and Rights of Way (CRoW) Act 2000.

The Natural Environment and Rural Communities (NERC) Act 2006 places a duty on public bodies to have regard for the conservation of biodiversity and maintains lists of species and habitats which are of principal importance for the purposes of conserving biodiversity in England and Wales. These lists supersede Section 74 of the CRoW Act 2000.

The United Kingdom Biodiversity Action Plan (UK BAP) first published in 1994 and updated in 2007, is a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UK BAP contains a list of priority habitats and species of conservation concern in the UK, and outlines biodiversity initiatives designed to enhance their conservation status. The priority habitats and species in England correlate with those listed on Section 41 of the NERC Act.

Dormice are listed on the UK BAP and Section 41 (England) and Section 42 (Wales) of the NERC Act 2006. The reader should refer to the original legislation for the definitive interpretation.

Information from Kent Local BAP

Dormice eat a variety of foods throughout the year, adapting their diet as the seasons progress. Early in the year they may feed on hazel catkins and pollen, moving on to honeysuckle nectar and aphids in mid-summer and berries, seeds and nuts in the autumn.

The presence of dormice may be revealed by a nest situated in bramble or low-growing shrubs. The nest is about the size of a grapefruit, with an outer layer of leaves that are often green as they are picked from the tree rather than collected from the ground, and the inside is made of woven grass or strips of bark. Dormice gnaw hazel nuts in a characteristic way; look for hazel nuts with a circular opening with a smooth edge where the dormouse has enlarged the hole using a scooping action with its teeth.

Woodland with hazel coppice is often considered typical dormouse habitat, but broadleaved woodland with a well-developed, diverse understorey or tall mature hedgerows can also provide good dormouse habitat, and they have been found in conifer plantations as well.

Over the past 120 years, the dormouse has disappeared from at least half of its British range, and is now found mainly in south England and south Wales. Even in the south, dormice are no longer present at 70% of sites where they were known to be 120 years ago.

The dormouse receives full legal protection under the Wildlife & Countryside Act 1981 and the European Habitats Directive, meaning that dormice including their nests and resting places are protected from disturbance and destruction. The dormouse is widespread throughout Kent, and whilst it is likely to have suffered a decline in the county that reflects the national trend, Kent is considered to be a stronghold for the species. The decline of the dormouse is linked to the loss of woodland, and the loss of hedgerows in the country. In order to expand their territories, dormice need to access new woods via hedgerows as they do not like to travel along the ground or across open spaces. Therefore, the loss of hedgerows has resulted in many remaining patches of woodland being isolated. Also, the practice of coppicing, which makes dormouse habitat more suitable for it, has declined.

Dormice have been recorded breeding in the conifer plantations at Bedgebury Pinetum in Kent. Bedgebury's dormice nest in birch scrub and are thought to feed on aphids and pine seeds. Elsewhere in Kent, dormice are probably present in most of the larger woodland blocks in the county. Surveys by Kent Mammal Group have found that they are normally present in semi-natural woodlands of 20ha or more in extent. Dormice are also priority species on the Kent Local BAP.

Nest boxes have been put up at more than twenty-four sites in Kent, which allows more dormice to nest and produce young in each patch of woodland. The nest boxes also make it easier to monitor their populations and the data collected contributes to the National Dormouse Monitoring Programme. The Kent Biodiversity Action Plan aims to extend the nest box scheme. Preventing further loss and fragmentation of woodland, securing appropriate woodland management including coppicing and linking up isolated populations through woodland and hedgerow planting will be crucial to maintaining and increasing the number of dormice living in Kent.

FOR CONTINUATION SEE DRAWING No.B18075/151

FOR CONTINUATION SEE DRAWING No.B18075/154

AS10 AS11 AS16 AS17 AS19 AS20 AS22 ASNG2 AS21 AS25 AS24 AS18 AS23 AS26 AS28 AS27 AS29 AS37 AS38 AS39 AS40 AS41 ASV2 ASV3 ASVG ASPS AS32 AS33 AS34 AS35 AS36 ASNG3

PRIMARY SCHOOL

SHW82 SHW94 SHW95 SHW96 SHW97 SHW105 SHW108 SHW154 SHW155 SHW156 SHW159 SHW35 SHW38 SHW52

S86 S92 S93 S91 S90 S89 S88 S87 S98 S99 S100 S101 S102 S103 S104 S106 S107 S115 S116 S117 S118 S119 S120 S121 S122 S123 S124 S125 S126 S127 S128 S129 S130 S131 S132 S133 S134 S135 S136 S137 S138 S139 S140 S141 S142 S142A S142B S143 S144 S145 S146 S147 S148 S149 S150 S151 S152 S153 S59A SDC158

F126 F127 F128 F120 F132 F131 F130 F133 F134 F135 F136 F99 F98 F97 F96 F95 F94 F93 F92 F91 F90 F89 F88 F87 F86 F85 F84 F83 F82 F81 F80 F79 F78 F77 F76 F75 F74 F73 F72 F71 F70 F69 F68 F67 F66 F65 F64 F63 F62 F61 F60 F59 F58 F57 F56 F55 F54 F53 F52 F51 F50 F39 F38 F37 F36 F35 F34 F33 F30

S10.011 (LAKE) S10.012 (LAKE) S10.013 (LAKE) S10.014 (LAKE)

SOUTHERN LAKE CATCHMENT 1
TOTAL CATCHMENT
GROSS 29.134Ha
NETT 17.372Ha

SOUTHERN LAKE CATCHMENT 2
TOTAL CATCHMENT
GROSS 5.688Ha
NETT 4.320Ha

SOUTHERN LAKE CATCHMENT 3
TOTAL CATCHMENT
GROSS 2.690Ha
NETT 1.823Ha

SOUTHERN LAKE CATCHMENT 4
TOTAL CATCHMENT
GROSS 52.159Ha
NETT 30.452Ha

SOUTHERN LAKE CATCHMENT 5
TOTAL CATCHMENT
GROSS 8.710Ha
NETT 5.592Ha

INTERMEDIATE FOULWATER PUMPING STATION FPS137

SPS157 SOUTH LAKE CONTROL PUMPING STATION

SOUTHERN LAKE

INFLOW
TOTAL CATCHMENT GROSS 109.282Ha
NETT 66.747Ha

OUTFLOW (TO NORTHERN LAKE) 217l/s

LEVELS
DEVELOPMENT THRESHOLD LEVEL 8m
NORMAL WATER LEVEL 6m
TOP WATER LEVEL (2 YEAR STORM) 6.299m
TOP WATER LEVEL (30 YEAR STORM) 6.560m
TOP WATER LEVEL (100 YEAR STORM +20%CC) 6.890m
TOP WATER LEVEL (100 YEAR STORM +40%CC) 7.027m

WATLING STREET

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DRAINAGE NOTES:
2.1 THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE WATER MANAGEMENT PLAN.
2.2 THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAINAGE STRATEGY DRAWINGS Nos. B18075151 TO 154.
2.3 FOR DETAILS OF TO WHICH PIPE CATCHMENTS DRAIN REFER TO CATCHMENT SCHEDULE DRAWING No.B18075155.
2.4 WATER WITHIN THE PONDS SHALL BE RECIRCULATED TO THE HEAD OF SWALES TO MAINTAIN A FLOW WITHIN THE SWALES AND TO PROVIDE ADDITIONAL TREATMENT. FILTER STRIPS SHALL BE PROVIDED WHEREVER ROADS RUN NEXT TO SWALES. SWALES SHALL BE INTERSPERSED WITH PONDS, CASCADES, WETLAND AREAS AND MARGINAL PLANTING OF REEDS ETC. ADDITIONAL SUDS FEATURES MAY BE ADDED WITHIN DEVELOPMENT PARCELS AS NECESSARY TO PROVIDE THE REQUISITE TREATMENT TO SURFACE WATER RUN OFF IN ACCORDANCE WITH THE SUDS MANUAL CIRIA C753.
2.5 DEVELOPMENT DRAINAGE SHALL (WHERE REQUIRED) BE DESIGNED AND ADOPTED UNDER SECTION 104 OF THE WATER INDUSTRY ACT 1991 AND SHALL COMPLY WITH DESIGN GUIDANCE LAID DOWN IN THE UK WATER GUIDE 'SEWERS FOR ADOPTION 6TH EDITION' (OR AS REVISED). SUCH SEWERS SHALL BE ADOPTED BY THE REGIONAL WATER COMPANY (INDEPENDENT WATER NETWORKS LIMITED - IWNL) WHERE REQUIRED.
2.6 ALL ADOPTABLE DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH 'SEWERS FOR ADOPTION' 6th EDITION, THE "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY' 6TH EDITION AND ANY SUBSEQUENT AMENDMENTS TO THESE DOCUMENTS.
2.7 NON-ADOPTED DRAINAGE (INCLUDING SWALES AND PONDS) SHALL REMAIN THE RESPONSIBILITY OF THE DEVELOPER/SITE OWNER UNLESS OTHERWISE TRANSFERRED TO AN OFFICIAL BODY BY SEPARATE AGREEMENT.
2.8 MANHOLE CHAMBER SIZES SHALL COMPLY WITH THE REQUIREMENTS OF 'SEWERS FOR ADOPTION 6th EDITION' (AND ANY SUBSEQUENT ADDENDUM INFORMATION PROVIDED BY WINL, PART H OF THE BUILDING REGULATIONS OR THE DESIGN MANUAL FOR ROADS AND BRIDGES, WHICHEVER IS THE PREFERENCE OF THE ADOPTING AUTHORITY.
2.9 HIGHWAY DRAINS SHALL BE ADOPTED UNDER SECTION 38 OF THE HIGHWAYS ACT 1980.
2.10 ALL DRAINAGE LAID WITHIN THE HIGHWAY SHALL HAVE A MINIMUM COVER OF 1.2m MEASURED FROM THE TOP OF PIPE BARREL TO THE FINISHED ROAD SURFACE.
2.11 ALL DRAINAGE UNDER PROPOSED ADOPTABLE ROADS AND FOOTWAYS SHALL BE A MINIMUM 150mm DIAMETER.
2.12 THE DRAINAGE LAYOUT SHOWN IS BASED ON PROVING LAYOUTS AND IS THEREFORE INDICATIVE.
2.13 STILLING BASINS FORMED IN GABION BASKETS WITH REEDS UPSTREAM, TO ALLOW ANY DESILTING OF FLOW AND TO RETAIN ANY FIRST FLUSH POLLUTANTS SHALL BE PROVIDED AT ALL HEADWALLS INTO PONDS.
2.14 ATTENUATION PONDS/BASINS HAVE BEEN DESIGNED ASSUMING NO INFILTRATION TO GROUND.
2.15 THE FIRST 5mm OF STORM WATER SHALL BE RETAINED IN SWALES BY HAVING THE SWALE OUTLET 200-300mm ABOVE BED LEVEL. IF THE SWALE GRADIENT IS GREATER THAN 1 IN 200 THEN A SWALE CASCADE ARRANGEMENT SHALL BE PROVIDED.
2.16 IN DRAINAGE EASEMENT AREAS, NO BUILDINGS, TREE PLANTING, WALLS, PRIVATE DRAINS / MANHOLES OR OTHER STRUCTURES ARE PERMITTED (UNLESS AGGREED WITH THE WATER COMPANY), CERTAIN SPECIES OF SHRUB AND HEDGING MAY BE ACCEPTABLE IN EASEMENT AREAS BY AGREEMENT WITH THE ADOPTING AUTHORITY.
2.17 URBAN CREEP OF 5% HAS BEEN ALLOWED FOR IN THE % IMPERMEABLE FOR ALL RESIDENTIAL PLOTS.

KEY: CATCHMENTS

- HIGHWAY CORRIDOR (75% IMPERMEABLE)
- LOW DENSITY HOUSING (40% IMPERMEABLE) (SEE NOTE 2.3)
- MEDIUM DENSITY HOUSING (60% IMPERMEABLE) (SEE NOTE 2.3)
- HIGH DENSITY HOUSING (80% IMPERMEABLE) (SEE NOTE 2.3)
- SCHOOLS WITH (80% IMPERMEABLE) (SEE NOTE 2.3)
- MIXED USE DEVELOPMENT WITH CATCHMENT REF (90% IMPERMEABLE)
- GREEN AREAS (20% IMPERMEABLE)
- LAKES (100% IMPERMEABLE)
- AREA NOT DIRECTLY CONTRIBUTING TO NETWORK
- AL30 CATCHMENT REF (SEE NOTE 2.3)

KEY: GENERAL

- S1.000 — SURFACE WATER SEWER AND CHAMBER WITH REFERENCES
- F1.000 — FOUL WATER SEWER AND CHAMBER WITH REFERENCES
- SWALE (SEE NOTE 2.4)
- CASTLE HILL LAKE MAIN AND PUMPING STATION
- SOUTH LAKE MAIN AND PUMPING STATION
- NORTH LAKE MAIN AND PUMPING STATION
- EFFLUENT TREATMENT MAIN AND PUMPING STATION
- RECIRCULATION MAIN AND PUMPING STATION
- EXTENT OF CATCHMENT TO CASTLE HILL LAKE
- EXTENT OF CATCHMENT TO NORTHERN LAKE
- SW OUTFALL HEADWALL TO LAKE (SEE NOTE 2.13)

Rev.	Amendments	Date	By
P1	INITIAL ISSUE.	18.12.18	RDT

Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy

40 St. Paul's Square
Birmingham
B3 1FQ
United Kingdom

T. +44 (0)121 237 5130
E. info@patrickparsons.co.uk
W. www.patrickparsons.co.uk

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MAIN INFRASTRUCTURE

Drawing
DRAINAGE STRATEGY
SHEET 3

Scales	1:1000	At original size	A0
Drawn	RDT	Checked	DCT
Date	18.12.18		

Status PRELIMINARY

Drawing No. B18075/153 Rev. P1

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Countryside Clarion (Eastern Quarry) LLP

Eastern Quarry: Ashmere Phase 4

Drainage Technical Note

Report Ref. 173535-04

August 2025

HEAD OFFICE: 3rd Floor, The Hallmark Building, 52-56 Leadenhall Street, London, EC3M 5JE **T** | 020 7680 4088
EDINBURGH: Suite 35 4-5 Lochside Way Edinburgh EH12 9DT **T** | 0131 516 8111
ESSEX: 1 - 2 Crescent Court, Billericay, Essex, CM12 9AQ **T** | 01277 657 677
KENT: Suite 10, Building 40, Churchill Business Centre, Kings Hill, Kent, ME19 4YU **T** | 01732 752 155
MIDLANDS: Office 3, The Garage Studios, 41-43 St Mary's Gate, Nottingham, NG1 1PU **T** | 0115 697 0940
SOUTH WEST: City Point, Temple Gate, Bristol, BS1 6PL **T** | 0117 456 4994
SUFFOLK: Suffolk Enterprise Centre, 44 Felaw Street, Ipswich, IP2 8SJ **T** | 01473 407 321

Email: enquiries@ardent-ce.co.uk

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5. Conclusion 14

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Appendix B – Patrick Parsons WMP
Appendix C – Phase 4 Drainage Strategy
Appendix D – Impermeable Area Plan
Appendix E – KCC Correspondence
Appendix F – SuDS Treatment Methods
Appendix G – Maintenance Plan

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Figure 2-1: Extract of Overall Site Surface Water Catchment Plan

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Table 3-2: Summary of PP's Phase 4 Water Management Catchment Areas
Table 3-3: Summary of Proposed Phase 4 Impermeable Area

Document Control Sheet

REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE
-	DRAFT	PM	AW	BB	August 2025
A	PRELIMINARY	PM	AW	BB	August 2025

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1. Introduction

Scope

1.1 This Drainage Technical Note has been prepared in support of a Reserved Matters submission to the Development Corporation (EDC) by Countryside Clarion (Eastern Quarry) LLP (the applicant) for the development known as Ashmere Phase 4 ('the site').

The Site

1.2 The Reserved Matters submission for Ashmere Phase 4 extends to approximately 4.618 ha. The Phase 4 boundary is surrounded open space to the south and west. To the north, the site is bound by the Fast Track and Phase 2 (approved under planning permission ref. (EDC/21/0079). To the east, the phase 4 boundary is bound by Phase 3, Phase 7a, and Phase 7b of the development. As the wider development is being brought forward as part of a number of phases, the sites eastern and southern boundaries are arbitrary and open up to the rest of the quarry. For the Phase 4 Development Layout, refer to **Appendix A**.

1.3 Pursuant to Conditions 2, 25, and 28 of the outline planning permission granted on 23 March 2017 (LPA Ref. EDC/17/0048), this submission seeks reserved matters approval for:

"Reserved Matters application (relating to access, appearance, landscaping, layout and scale) pursuant to condition 2 (details of Reserved Matters), Condition 25 (Reserved Matters Design Details) and Condition 28 (Noise Report) of outline planning permission EDC/17/0048 for 227 dwellings and associated infrastructure including roads, surface water attenuation and electricity sub-stations."

Figure 1-1: Extract of Site Plan (BPTW Architects)

1.4 The above proposals are referred to in this Statement as "the Development".

1.5 Phase 4 of Ashmere is part of a wider strategic development within Eastern Quarry for mixed-use development comprising up to 6,250 dwellings, and up to 231,000 square metres of non-residential floorspace. Eastern Quarry comprises principally five

areas: Western Village (now known as Ashmere), Central Village (now known as Alkerden), Castle Hill Central, Castle Hill South, and Castle Hill East.

1.6 Ashmere is to comprise approximately 12 phases amounting to up to 3,000 residential dwellings. Works have already begun on Ashmere Phases 1 and 2, which together will deliver 516 dwellings.

Pre-Application Consultation

1.7 The submission follows extensive pre-application discussions covering the Area Masterplan, Design Code and Reserved Matters submission. This has involved discussions with planning, design, and Kent County Council (KCC) highways officers. Consultation has also been held with local residents and key stakeholders in relation to the scheme.

Surrounding Area

1.8 The wider Eastern Quarry site is bounded by the settlements of Greenhithe and Knockhall to the north, and Bluewater shopping centre to the west. The site is otherwise dominated by the remainder of the chalk quarry to the south and east. Quarrying activity at the site has created a landscape with steep chalk cliffs around the quarry's southern, western and north-western boundaries. Like the Phase 1 area, much of the site has been backfilled with Thanet Sand over the worked chalk and there are considerable land level differences between the quarry floor and the site's surroundings.

1.9 At present, access to the site is via the Eastern Avenue roundabout and through Phases 1 and 2 of the development and located off the secondary road in Phase 3. Tunnels remain located under Bean Road (towards the southwest of the quarry and north of Phase 4) which provides access into Bluewater Shopping Centre and will be restored to accommodate Fastrack. Development has already commenced at the eastern end of Eastern Quarry, in an area collectively known as Castle Hill and Phase 1 and 2 of Ashmere.

Description of Development

1.10 Details of the layout, scale, appearance and landscaping pursuant to outline planning application EDC/17/0048 comprising 227 dwellings and associated infrastructure

including roads and surface water attenuation.

1.11 An extract of Outline Planning Condition (ref. DC/17/0048) 12 relating to drainage is provided below:

Water Management Plan

A Water Management Plan shall be submitted prior to or at the same time as the first Area Master Plan, submitted pursuant to condition 19, for approval by the local planning authority. The Water Management Plan shall be implemented as approved. The management plan should include details on the following matters and should relate to both the construction and the post development period:

(a) Ground water monitoring
(b) Details of surface water drainage and ground water control
(c) Details of foul water drainage including (where necessary) pumping stations
(d) Control of water levels
(e) Method of discharge of water to Swanscombe Peninsula, monitoring of impact and necessary continuation if unacceptable water levels arise
(f) Monitoring of discharge into Ebbsfleet Valley and attenuation where necessary
(g) Passive drainage systems
(h) Sustainable Urban Drainage Systems and management of the system
(i) Methodology for the control of salt accumulation
(j) Details of responsibilities for management and maintenance for lifetime of the development where water management is in the public realm
(k) Programme for monitoring and review of water management

Such Water Management Plan shall be reviewed and revised, where necessary, and submitted for approval prior to each subsequent Area Master Plan serving built development. The Action Plan shall be implemented in accordance with the latest approved version.

Figure 1-2: Extract of Drainage Planning Condition

1.12 A Water Management Plan (WMP) produced by Patrick Parsons dated 18th December 2018 was submitted to Ebbsfleet Development Corporation (EDC) to discharge Condition 12 and has been approved. EDC confirmed discharge of Condition 12 on 14th June 2019. The WMP and the supporting Drainage Strategy has been used as the basis for this report. An extract of the Patrick Parsons WMP is included within **Appendix B**.

2. Existing Site

Existing Site Description

2.1 Phase 4 of the development is situated on a formerly operational sand and gravel quarry. The undeveloped site is considered to comprise of 100% permeable area.

2.2 An extract of the proposed Site Plan is shown in **Figure 1-1**.

2.3 The Patrick Parsons' Water Management Report (December 2018) alludes to the presence of impermeable (c. 10-6 m/s) Thanet Sands. The development platform forming Phase 4 has been constructed by compacting imported material and is not considered suitable for infiltration. Therefore, the use of infiltration drainage techniques has been discounted.

Existing Surface Water Drainage

2.4 The greenfield runoff rates have been calculated as part of the site-wide Surface Water Drainage Strategy, which were agreed at Outline Planning stage. Refer to drawing number B18975/151-154 P1 within the WMP. A network of Strategic Swales and a Lake has been designed to allow attenuation to greenfield rates. The discharge rates from the development parcels into the strategic drainage network have been set out within the Strategic Design Documents and are based upon anticipated impermeable area within the development parcels and supporting road network.

2.5 An extract of the Overall Site Surface Water Catchment Plan for the network is shown in **Figure 2-1** and is included in **Appendix B**.

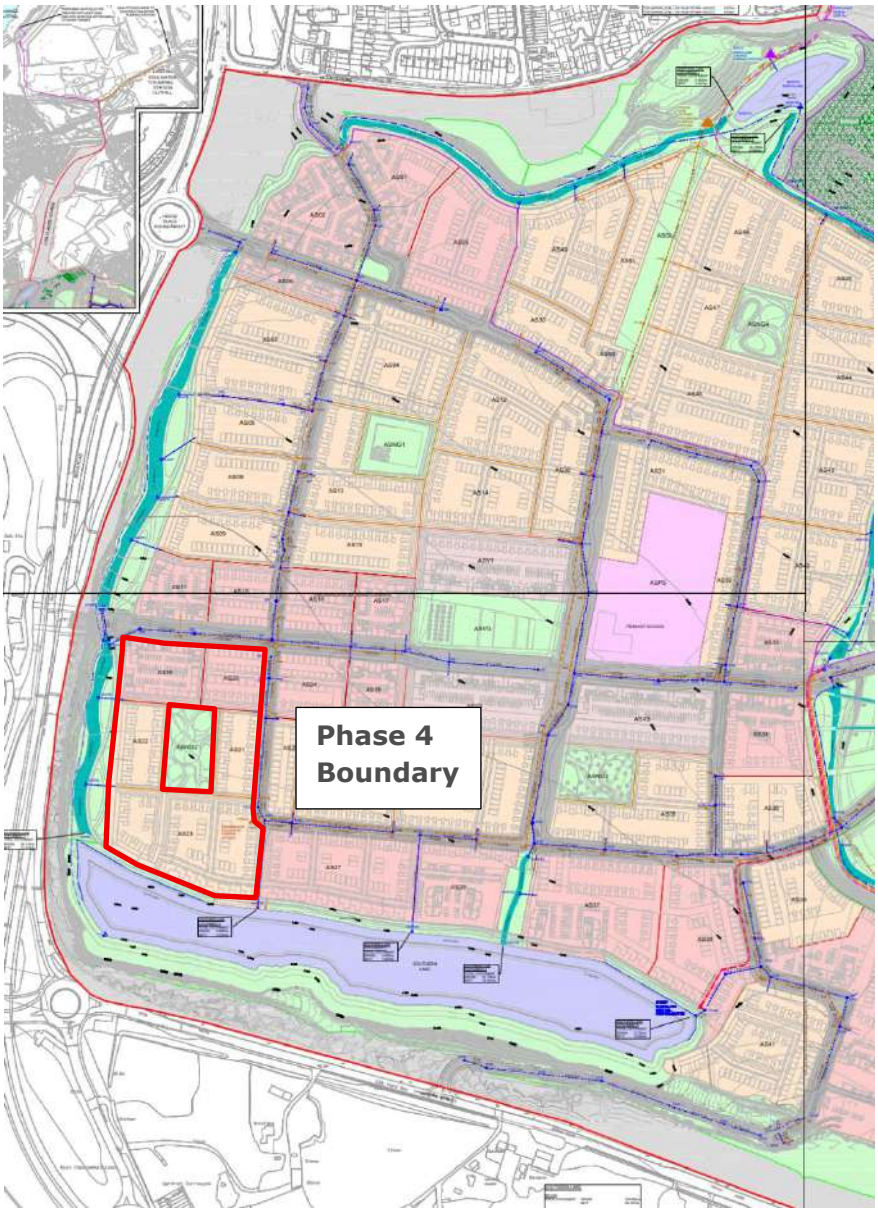

Figure 2-1: Extract of Overall Site Surface Water Catchment Plan

3. Surface Water Drainage

Technical Standards

3.1 The surface water drainage strategy for the proposed development is in accordance with the following technical standards and best practice guidance, which are referred to throughout this section:

- Kent County Council's (KCC's) adopted Sustainable Drainage Systems Design Guide;
- The CIRIA SuDS Manual (C753);
- The National Planning Policy Framework.

Strategic Surface Water Drainage Strategy

3.2 The strategic drainage network (as set out within WMP) comprises a piped surface water network within the constructed highway adjacent to the proposed Phase 4 parcel. The proposed masterplan drainage design includes a combination of vegetated swales and two lakes which will attenuate runoff before discharging to the River Thames. This follows the agreed approach on Ashmere Phase 1 and Phase 2.

3.3 The main strategic drainage network serving the parcel will be adopted by Independent Water Networks Limited (IWNL) under a Section 104 Agreement.

Surface Water Drainage Options Consideration

3.4 In line with CIRIA guidance C753 (The SuDS manual), the drainage hierarchy needs to be considered and is listed below in order of preference:

- Store rainwater for later use;
- Use infiltration techniques, such as porous surfaces in non-clay areas;
- Attenuate rainwater by storing in tanks or sealed water features for gradual release to a watercourse;
- Discharge rainwater direct to a watercourse;
- Discharge rainwater to a surface water drain; and
- Discharge rainwater to the combined sewer.

Store rainwater for later use

3.5 There is potential to reuse a percentage of the rainwater within the site by installing water butts. However, this only accounts for a small proportion of the runoff during a storm event and therefore other options need to be considered in parallel.

Use infiltration techniques, such as porous surfaces in non-clay areas

3.6 The approved Water Management Plan report highlighted the concern regarding the reuse of Thanet Sand overburden and leaching of iron by infiltrating water which may affect water quality within the chalk aquifer. Therefore, infiltration has not been considered as a surface water drainage strategy.

Discharge rainwater to surface water drain

3.7 Rainwater from the Phase 4 parcel will directly discharge to surface water pipes, which connect directly into the strategic SuDS network.

Sustainable Drainage Systems (SuDS) Hierarchy

3.8 Table 3-1 below appraises the constraints and opportunities for the use of SuDS techniques within the site and it adopts the management train approach outlined in CIRIA C753 'The SuDS Manual'.

Table 3-1: C753 SuDS Hierarchy, Site Assessment

Type:	**Infiltration Device** (Source Control)
Constraints:	Infiltration restrained due to soil quality concern and impact on existing aquifer.
Opportunities:	None
Type:	**Permeable Paving** (Source Control)
Constraints:	See infiltration devices above. The effectiveness of Permeable Paving is dependent upon regular maintenance, in private areas this cannot be assured.
Opportunities:	It is the intention to construct the main access roads serving the development to an adoptable standard, which would preclude the use of permeable paving.
Type:	**Swales, etc.** (Permeable Conveyance)
Constraints:	Swales require a minimum 1 in 3 side slope which have a significant land take in a parcel which has a high development density.
Opportunities:	A proposed swale, to the west of the parcel, is part of the strategic drainage strategy which serves the Phase 4 development parcel via the piped network discharge.
Type:	**Attenuation Basin / Ponds** (end of pipe treatment)
Constraints:	There is not sufficient space within the Phase 4 development parcel for attenuation basins.
Opportunities:	Attenuation provided as part of the wider strategic drainage network via the proposed lake to the south of the parcel.

Proposed Phase 4 Surface Water Drainage Strategy

3.9 Surface water runoff from Phase 4 will discharge into the Strategic Surface Water SuDS Network via stub connections into the development parcel. The proposed drainage strategy for Phase 4 is shown in **Appendix C**.

3.10 The drainage design within the approved Patrick Parsons Water Management Plan is based upon the bulk catchment areas contributing to the strategic SuDS network. The catchments for the Phase 4 parcel and contributing impervious areas are summarised in Table 3-2 below.

Table 3-2: Summary of PP's Phase 4 Water Management Catchment Areas

Catchment	Gross Catchment Area (ha)	Permeability	NET Impermeable Area (ha)
AS19	0.612	80%	0.489
AS20	0.467	80%	0.373
AS21	0.452	60%	0.271
AS22	0.550	60%	0.330
AS23	1.718	60%	1.031
Total	**3.799**	**66%**	**2.494**

3.11 The impermeable area of the proposed development has been measured based upon the site layout and is summarised in **Table 3-3** below. As per the Local Authority SuDS Officer Organisation (LASOO) Non-Statutory Technical Standards for Sustainable Drainage Guidance, this includes an allowance of 6% for urban creep on the house and garage roof areas and driveways only, at a density of 36 dwellings per hectare. For the Impermeable Area Plan for Phase 4, refer to **Appendix D**.

Table 3-3: Summary of Proposed Phase 4 Impermeable Area

Catchment	Gross Catchment Area (ha)	Total Measured Impermeable Area (ha)	Total Impermeable Area (incl 6% urban creep)	% Impermeable (Measured incl urban creep)
Phase 4	4.210	2.497	2.566	61

3.12 Given that the impermeable area percentage within the proposals is less than that allowed for within the Patrick Parson's Water Management Plan, the strategic network is deemed to have adequate capacity for the development. The drainage proposals have been discussed with Henley Camland and agreed in principle.

3.13 The Drainage Strategy for Phase 1 and the Strategic Drainage Network design were discussed with KCC in their role as the Lead Local Flood Authority in December 2019.

The Drainage Strategy for Phase 4 has been developed using the principles agreed with KCC at this meeting. The correspondence is included within **Appendix E**.

Long Term Storage

3.14 Long term storage requirements have been dealt with as part of the approved drainage and SuDS strategy prepared to support the overall application. As this site is covered by the approved strategy, no further provision of long-term storage is required to support this application.

Surface Water Runoff Quality

3.15 An assessment of the water quality of surface water runoff has been carried out in line with CIRIA C753 requirements, refer to **Appendix F**.

3.16 In determining the necessary SuDS treatment methods, reference is made to Table 26.2, Table 26.3 and Table 26.4 of the SuDS Manual (CIRIA C753), which have been duplicated in **Appendix F**. The tables outline the 'Simple Index Approach' which sets out the water treatment criteria in relation to land use and SuDS performance evidence. To ensure sufficient treatment is proposed for surface waters, the total pollution mitigation index of the selected SuDS methods must equal or exceed the pollution hazard index for the site.

3.17 Sections of the road network within Phase 4 will experience above 300 traffic movements per day, as such the development has been assessed as Medium Risk. The peripheral roads within the parcel will experience less the 300 traffic movements per day and will be treated as Low Risk.

3.18 The Phase 4 development discharges directly to the piped network and will rely on the SuDS treatment within the Strategic Network, these consist of a cascading swale network and a lake.

3.20 As the calculations in **Appendix F** demonstrates, the strategic swale and pond provides more than adequate treatment to serve the development. It has therefore

been demonstrated that adequate treatment is provided within the proposed SuDS network prior to discharge of run-off into the existing watercourses.

Exceedance Routes

3.21 As a result of heavy or extreme storm events it is sometimes unavoidable for the capacity of sewers and other drainage systems to be exceeded. Drainage exceedance will occur when the rate of surface water runoff exceeds the inlet capacity of the drainage system, when the receiving water or pipe system becomes overloaded, blocked or when the outfall is restricted due to flood levels in the receiving water.

3.22 The routes will ultimately mimic the current flow routes associated with the existing site as a result of the topography. All public roads and private drives will flow away from residential access points. For exceedance routes, see the Drainage Strategy drawing within **Appendix C**.

Maintenance During Construction

3.23 The downstream network, including outfalls into the swale, will be completed prior to works commencing.

3.24 It is the intention that the main strategic sewers will be adopted by IWNL under a S104 agreement.

3.25 All of the plot drainage will remain private, whilst all gullies and connections within adoptable roads will be offered to Kent County Council for adoption.

3.26 A maintenance plan is also included in **Appendix G**. These have been informed by the guidance outlined within CIRIA C753 and would be supplemented by manufacturer's specifications.

4. Foul Water Drainage

4.1 Foul Water is proposed to flow by gravity to the strategic foul network via stubs off the proposed Phase 3 drainage toward the junction of the Secondary Road and Fast Track. A foul water pumping station is proposed to pump foul water for the majority of the parcel up to the level of one of the stubs off the Secondary Road. The strategic network flows to proposed pumping stations before being conveyed to the existing Southern Water Sewers offsite. Details of the strategic foul network can be seen in more detail in drawing B18075/151-154 P1, which is included in **Appendix B**.

4.2 In line with the Sewerage Sector Guidance Appendix C, clause B3.1b, the peak design rate for foul water can be determined as a rate 0.05 litres per second for each dwelling. The total proposed foul flow from the Phase 4 development has been calculated to be approximately 11.35 l/s based upon peak loadings for the proposed 227 residential units. Additional flows have been allowed for from the future parcels located to the east of the site.

4.3 The drainage strategy for the Phase 4 development is included in **Appendix C**.

5. Conclusion

5.1 The Phase 4 development proposals are to construct a total of 227 residential dwellings and associated infrastructure.

5.2 The discharge rates from the site have been agreed as part of the Strategic Surface Water Drainage Strategy, which were agreed at Outline Planning stage.

5.3 The Strategic Surface Water Drainage Strategy comprises a piped surface water network within the highways adjacent to and within the Phase 4 development.

5.4 Downstream of the strategic piped network is a series of cascading swales which discharge into the Southern Lake.

5.5 The quality of surface water runoff has been assessed based on guidance within CIRIA C753 SuDS Manual. The results demonstrate that all surfaces within the Phase 4 development will receive adequate treatment prior to discharge of run-off into the existing watercourses.

5.6 Surface water design calculations have been carried out for the 1 in 1 and 1 in 100 year plus climate change allowance storm events to determine pipe sizes and discharge rates.

5.7 A 40% allowance for climate change was applied to the rainfall intensities, which was set out within the FRA and approved at Outline Planning stage. A 6% allowance for future urban creep has been provided for all run-off from dwellings.

5.8 The drainage strategy is based upon the principles agreed with the Lead Local Flood Authority and consistent with the site wide drainage strategy.

5.9 The foul water drainage for the Phase 4 development is discharged via stubs to the strategic network, within the highways, via a gravity connection. The majority of the foul drainage will pass through a pump station to be conveyed up to one of the stubs off the Secondary Road.

5.10 This Technical Note demonstrates that the proposals are consistent with the aims of the technical standards and are in accordance with the requirements of the relevant planning conditions. The proposals also follow the guidance set out within the Strategic Surface Water Drainage Strategy documents and locations and rates of discharge match what is set out within the accompanying strategic plans and calculations.

5.10 The site would not be at risk of flooding or increase the flood risk to others as a result of the proposed development.

Appendix A

Development Layout

A
5/635
Block A (Private)
13 X 1B2P
21 X 2B4P
Total 34 homes

B
4 28
Block B (Shared Ownership)
8 X 1B2P
20 X 2B4P
Total 28 homes

C
4 25
Block C (Private)
11 X 1B2P
14 X 2B4P
Total 25 homes

71 Flat block parking spaces
17 houses parking spaces

BUS STOP

BUS ONLY

1.25m
1.5m
0.75m
1m

KEY

- Planning red line boundary

Proposed buildings:

- 1 Bed Flat
- 2 Bed Flat / House
- 3 Bed House
- 4 Bed House
- Ancillary / Garage
- TXX.XX House parking
- P / UP Flat parking
- V Visitor parking
- P Substation parking

Storeys: A 4 12 — Block/Terrace Number, Dwellings

Notes:
Do not scale. All dimensions are in millimetres unless otherwise stated. This drawing should be read in conjunction with all relevant project information and contract documentation. All dimensions to be checked prior to fabrication and or commencement of works. All works to comply with all relevant legal standards, building regulations and warranty provider requirements. Report any discrepancies, if in doubt ask.

Revisions:

Rev	Status	Date	Description	Drn	Chkd
P13	S3	08.07.25	Updated Site Layout for Coordination	AE	
P14	S3	11.07.25	Layout Freeze	AE	
P15	S3	14.07.25	Updated Site Boundary with Lighting	AE	
P16	S3	01.08.25	Design Freeze	AE	
P17	S3	13.08.25	Updated Layout including parking update to T07	AE	

Client Name: Vistry

Project Name: Ashmere Phase 4

Drawing Name: Preliminary Masterplan - Ground Floor

Drawing Number: ASH-BPTW-S01-ZZ-DS-A-0304 | Rev: P17 | Status: S3

Project No: 22-171 | RIBA Stage: 03 | Drawn By: JB | Scale: 1:500 @ A1

PRELIMINARY - FOR COMMENT

40 Norman Road,
Greenwich, London
SE10 9QX

t. 020 8293 5175
bptw.co.uk

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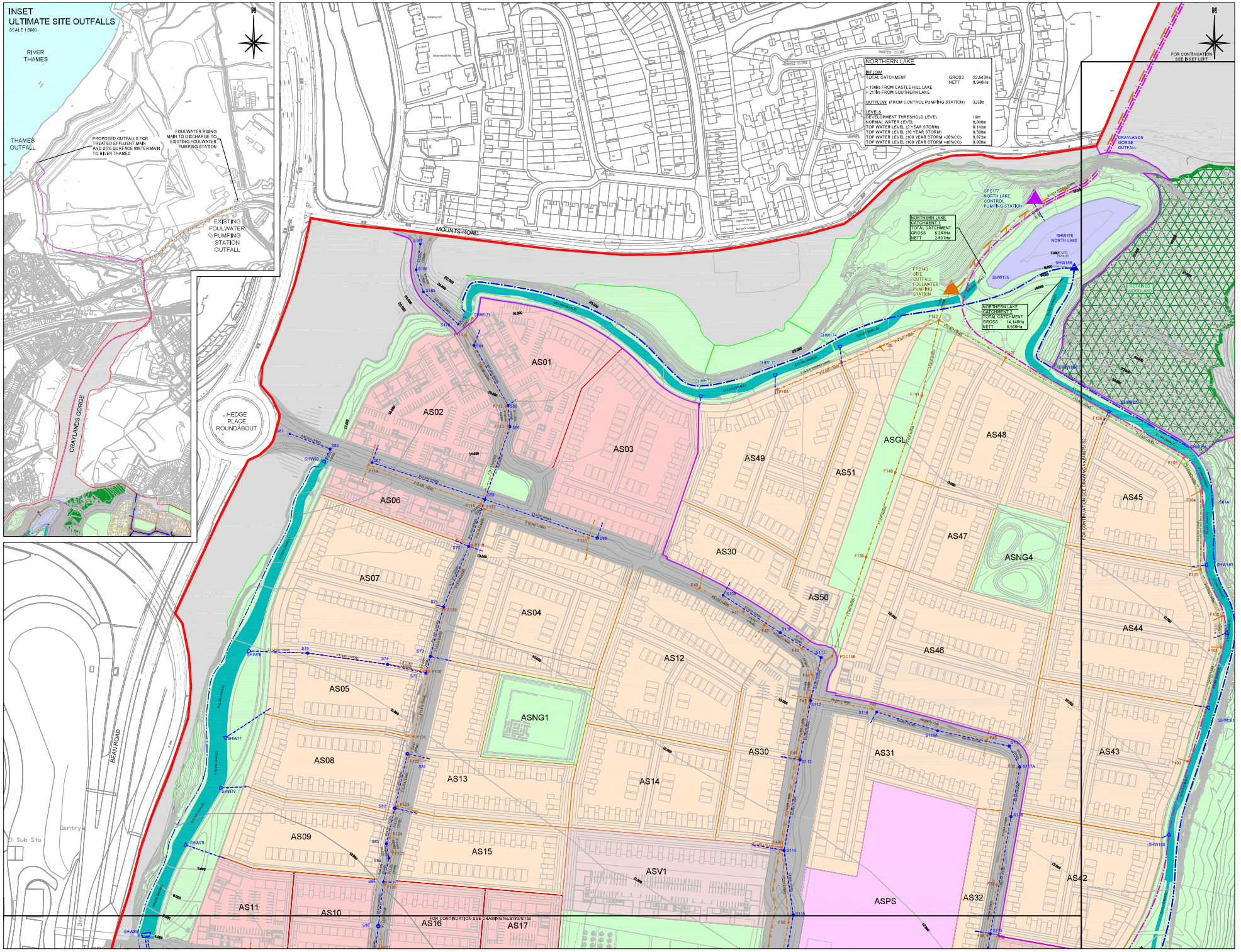
Appendix B

Patrick Parsons Water Management Plan



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2.2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAINAGE STRATEGY DRAWINGS No. B18075/151 TO 153.

2.3. THE SIZE OF ALL DRAINAGE PIPE CATCHMENTS ARE REFERRED TO CATCHMENT SCHEDULE DRAWING No.B18075/150.

2.4. WATER WITHIN THE PONDS SHALL BE RECIRCULATED TO THE HEAD OF SWALES TO MAINTAIN FLOWS WITHIN THE SWALES AND TO PROVIDE ADDITIONAL TREATMENT. FILTER STRIPS SHALL BE PROVIDED WHERE THE ROADS RUN PARALLEL TO SWALES. SWALES SHALL BE INTERSPERSED WITH POND, CASCADES, WETLAND AREAS AND MARGINAL PLANTING OF REEDS ETC. ADDITIONAL SUDS TREATMENT SHALL BE ADDED TO ROOF DRAINAGE WHERE ROOFS ARE CONNECTED DIRECTLY TO THE PIPE NETWORK FOR TREATMENT TO SURFACE WATER QUALITY IN ACCORDANCE WITH THE SUDS MANUAL CIRIA C753.

2.5. DEVELOPMENT DRAINAGE SHALL WHERE REQUIRED BE DESIGNED AND ADOPTED UNDER SECTION 104 OF THE WATER INDUSTRY ACT 1991 AND SHALL COMPLY WITH DESIGN GUIDANCE LAID DOWN BY THE WATER AUTHORITIES FOR SEWERS FOR ADOPTION 6TH EDITION (OR AS REVISED). SUCH SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE WATER AUTHORITIES INSPECTION PROCEDURES AND WORKING METHODS WHERE REQUIRED.

2.6. ALL ADOPTABLE DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 6TH EDITION, THE HIGHWAYS ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY (WRC PUBLICATION) AND SUBSEQUENT AMENDMENTS TO THESE DOCUMENTS.

2.7. NON-ADOPTED DRAINAGE INCLUDING SWALES AND PONDS SHALL REMAIN THE RESPONSIBILITY OF THE DEVELOPER OR THEIR NOMINATED AGENTS UNLESS TRANSFERRED TO AN APPROPRIATE BODY BY SEPARATE AGREEMENT.

2.8. MANHOLES FOR SEWERS WILL COMPLY WITH THE REQUIREMENTS OF 'SEWERS FOR ADOPTION 6th EDITION' AND ANY SUBSEQUENT AMENDMENTS OR INFORMATION PROVIDED BY EMAIL. PART 'H' OF THE BUILDING REGULATIONS OR THE DESIGN MANUAL FOR ROADS AND BRIDGES, AS APPROPRIATE TO THE PREFERENCES OF THE ADOPTING AUTHORITY.

2.9. HIGHWAY DRAINS SHALL BE ADOPTED UNDER SECTION 38 OF THE HIGHWAYS ACT 1980.

2.10. ALL DRAINAGE AND SERVICE RUNS AND TRENCHES SHALL HAVE A MINIMUM COVER OF 1.2m MEASURED FROM THE TOP OF THE PIPE BARREL TO THE FINISHED ROAD SURFACE.

2.11. ALL DRAINAGE UNDER PROPOSED ADOPTABLE ROADS AND FOOTWAYS SHALL BE A MINIMUM 150mm DIAMETER.

2.12. THE DRAINAGE LAY OUT SHOWN IS BASED ON PRELIMINARY LAYOUTS AND THEREFORE DETAILS, SITE LEVELS BASINS FORMED IN GABION BASKETS WITH OUTLET PIPES AND ALL OTHER DETAILS IN RESPECT OF FLOOD ATTENUATION ARE SUBJECT TO FINAL DESIGN.

2.13. ALL POLLUTANTS SHALL BE PREVENTED FROM ALL HEADWALLS INTO POND.

2.14. ATTENUATION PONDS/BASINS HAVE BEEN DESIGNED ASSUMING NO INFILTRATION TO GROUND.

2.15. THE FIRST 5mm OF STORM WATER SHALL BE RETAINED WITHIN SWALES BY RAISING THE SWALE OUTLET 25x300mm ABOVE SWALE LEVEL. IF THE SWALE GRADIENT IS GREATER THAN 1:20 THEN A SWALE CASCADE ARRANGEMENT SHALL BE PROVIDED.

2.16. NO PERMANENT ARBOR, NO BUILDINGS, TREE PLANTING, WALLS, PRIVATE DRAIN, MANHOLES OR OTHER STRUCTURES ARE PERMITTED UNLESS AGREED WITH THE WATER COMPANY. CERTAIN SPECIES OF SHRUB AND HEDGING MAY BE ACCEPTABLE IN CASH/VERT AREAS BY AGREEMENT WITH THE WATER AUTHORITY.

2.17. UPRAY CREEP OF 5% HAS BEEN ALLOWED FOR IN THE IMPERMEABLES FOR ALL RESIDENTIAL PLOTS.

KEY: CATCHMENTS

- HIGHWAY CORRIDOR (70% IMPERMEABLE)
- LOW DENSITY HOUSING (40% IMPERMEABLE) (SEE NOTE 2.2)
- MEDIUM DENSITY HOUSING (60% IMPERMEABLE) (SEE NOTE 2.2)
- HIGH DENSITY HOUSING (80% IMPERMEABLE) (SEE NOTE 2.2)
- SCHOOLS (60% IMPERMEABLE) (SEE NOTE 2.2)
- MIXED USE DEVELOPMENT WITH CATCHMENT REF (80% IMPERMEABLE)
- GREEN AREAS (20% IMPERMEABLE)
- LAKES (100% IMPERMEABLE)
- AREA NOT DIRECTLY CONNECTED TO NETWORK

AL30 CATCHMENT REF (SEE NOTE 2.2)

KEY: GENERAL

- SURFACE WATER SEWER AND CHAMBER WITH REFERENCES
- FOUL WATER SEWER AND CHAMBER WITH REFERENCES
- SWALE (SEE NOTE 2.4)
- CASTLE HILL LAKE MAIN AND PUMPING STATION
- SOUTH LAKE MAIN AND PUMPING STATION
- NORTH LAKE MAIN AND PUMPING STATION
- EFFLUENT TREATMENT MAIN AND PUMPING STATION
- RECIRCULATION MAIN AND PUMPING STATION
- EXTENT OF CATCHMENT TO CASTLE HILL LAKE
- EXTENT OF CATCHMENT TO NORTHERN LAKE
- SW OUTFALL HEADWALL TO LAKE (SEE NOTE 2.13)

Rev.	Amendments	Date	By
P1	INITIAL ISSUE	18.12.18	RGT

Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy
40 St Paul's Square
Birmingham
B3 1RG
United Kingdom
T. +44 (0)121 237 5100
E. info@patrickparsons.co.uk
W. www.patrickparsons.co.uk

Client
EASTERN QUARRY LTD.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
MAIN INFRASTRUCTURE

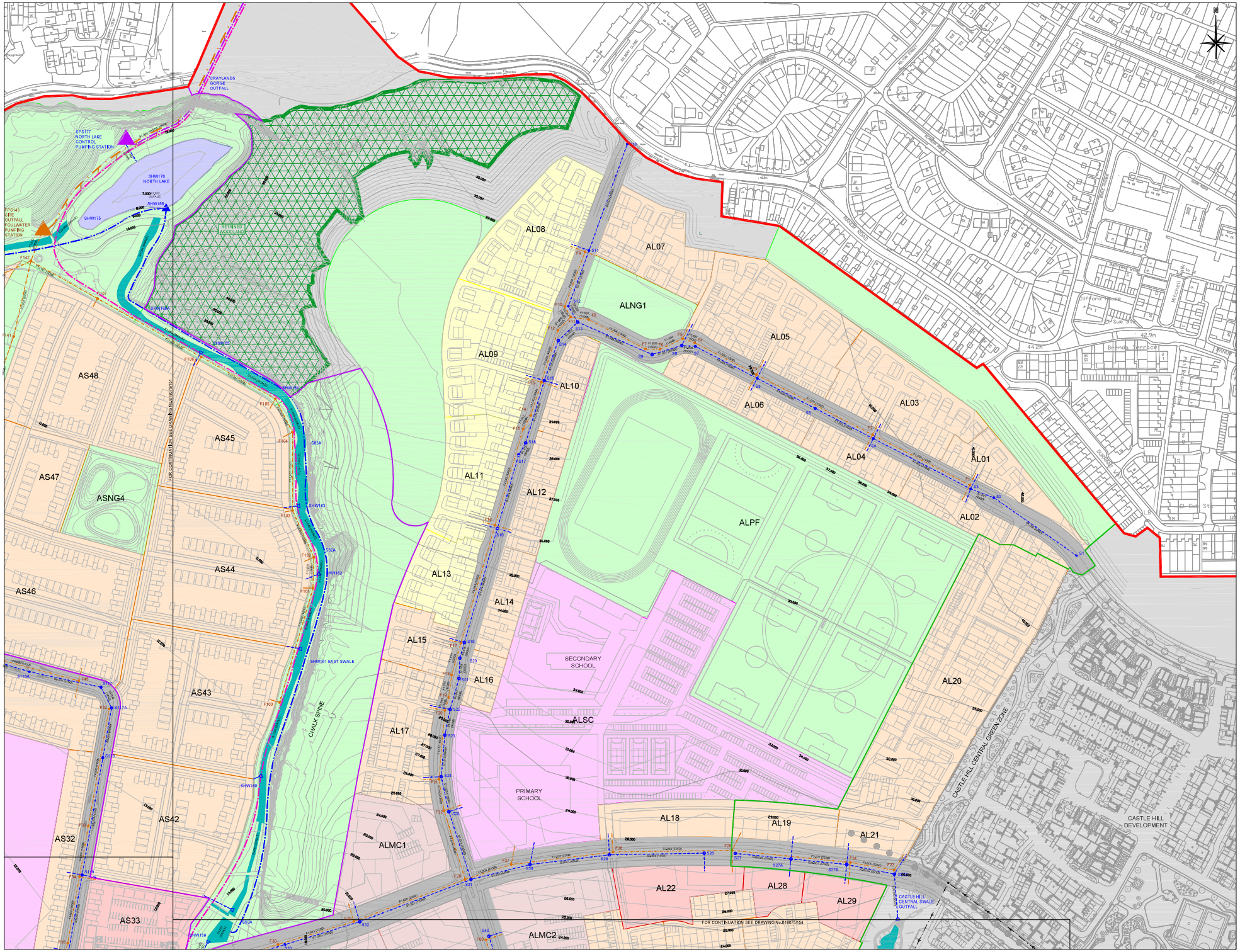
Drawing
DRAINAGE STRATEGY
SHEET 1

Scale 1:1,000/1:5,000 At original size A0

Drawn RGT Checked DCT
Date 18.12.18

Status PRELIMINARY

Drawing No. B18075/151 Rev. P1



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2.5. DEVELOPMENT DRAINAGE SHALL WHERE REQUIRED BE DESIGNED AND ADOPTED UNDER SECTION 104 OF THE WATER INDUSTRY ACT 1991 AND SHALL COMPLY WITH DESIGN GUIDANCE LAID DOWN BY THE UK WATER INDUSTRY SEWERS FOR ADOPTION 6TH EDITION (OR AS REVISED). SUCH SEWERS SHALL BE LAID IN ACCORDANCE WITH THE WATER COMPANY'S CURRENT AGREEMENT WITH THE DEVELOPER. ALL SEWERS REQUIRED, ALL ADOPTABLE DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 6TH EDITION, THE LOCAL ENGINEERING SPECIFICATIONS FOR THE WATER INDUSTRY 6TH EDITION AND ANY SUBSEQUENT AMENDMENTS TO THESE DOCUMENTS.

2.6. NON-ADOPTED DRAINAGE INCLUDING SWALES AND PONDS SHALL REMAIN THE RESPONSIBILITY OF THE DEVELOPER OR SUBSEQUENT MANAGEMENT COMPANY APPOINTED TO AN ORIGINAL BODY BY SEPARATE AGREEMENT.

2.7. MANHOLE CHAMBERS SHALL COMPLY WITH THE REQUIREMENTS OF 'SEWERS FOR ADOPTION 6TH EDITION' AND ANY SUBSEQUENT ADDENDUM INFORMATION PROVIDED BY EMAIL PART H OF THE BUILDING REGULATIONS OR THE DESIGN MANUAL FOR ROADS AND BRIDGES, WHICHEVER IS THE PREFERENCE OF THE ADOPTING AUTHORITY.

2.8. HIGHWAY DRAINS SHALL BE ADOPTED UNDER SECTION 38 OF THE HIGHWAYS ACT 1980.

2.9. ALL MANHOLE COVERS IN TRAFFIC AREAS SHALL HAVE A MINIMUM CLEAR OPENING OF 600 MM SET FROM THE TOP OF THE SURROUND TO THE FINISHED ROAD SURFACE.

2.11. ALL DRAINAGE UNDER PROPOSED ADOPTABLE ROADS AND FOOTWAYS SHALL BE A MINIMUM 150mm DIAMETER.

2.12. THE DRAINAGE LAYOUT SHOWN IS BASED ON PROVIDED LAYOUTS AND PRESENTED LEVELS, STILLING BASINS FORMED IN GABION BASKETS WITH 300 MM DEEP GRAVEL FILLING AND PROVISION OF FLOW SPREADERS SHALL MARK FIRST FLUSH POLLUTANTS SHALL BE DIRECTED AT ALL HEADWALLS INTO POWER.

2.14. ATTENUATION PONDS/BASINS HAVE BEEN DESIGNED ASSUMING NO INFILTRATION TO GROUND.

2.15. THE FIRST 5mm OF STORM WATER SHALL BE RETAINED IN SWALES BY MEANS THE SWALE OUTLET ORIFICE/WEIR ABOVE BED LEVEL. IF THE SWALE GRADIENT IS GREATER THAN 1:20 THEN A SWALE CASCADE ARRANGEMENT SHALL BE PROVIDED.

2.16. WITHIN PUBLIC AMENITY AREAS, NO BUILDINGS, TREES, PLANTING, WALLS, PRIVATE DRAINS, SOAKAWAYS OR OTHER STRUCTURES ARE PERMITTED UNLESS AGREED WITH THE WATER COMPANY'S. CERTAIN SPECIES OF SHRUB AND HEDGING MAY BE ACCEPTABLE IN EASEMENT AREAS BY AGREEMENT WITH THE ADOPTING AUTHORITY.

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- EXTENT OF CATCHMENT TO NORTH PARK LAKE
- SW OUTFALL HEADWALL TO LAKE (SEE NOTE 2.12)

Rev.	Amendments	Date	By
P1	INITIAL ISSUE	16.12.18	RDT

Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy
40 St Paul's Square
Birmingham
B3 1RQ
United Kingdom
T. +44 (0)121 237 5100
E. info@patrickparsons.co.uk
W. www.patrickparsons.com

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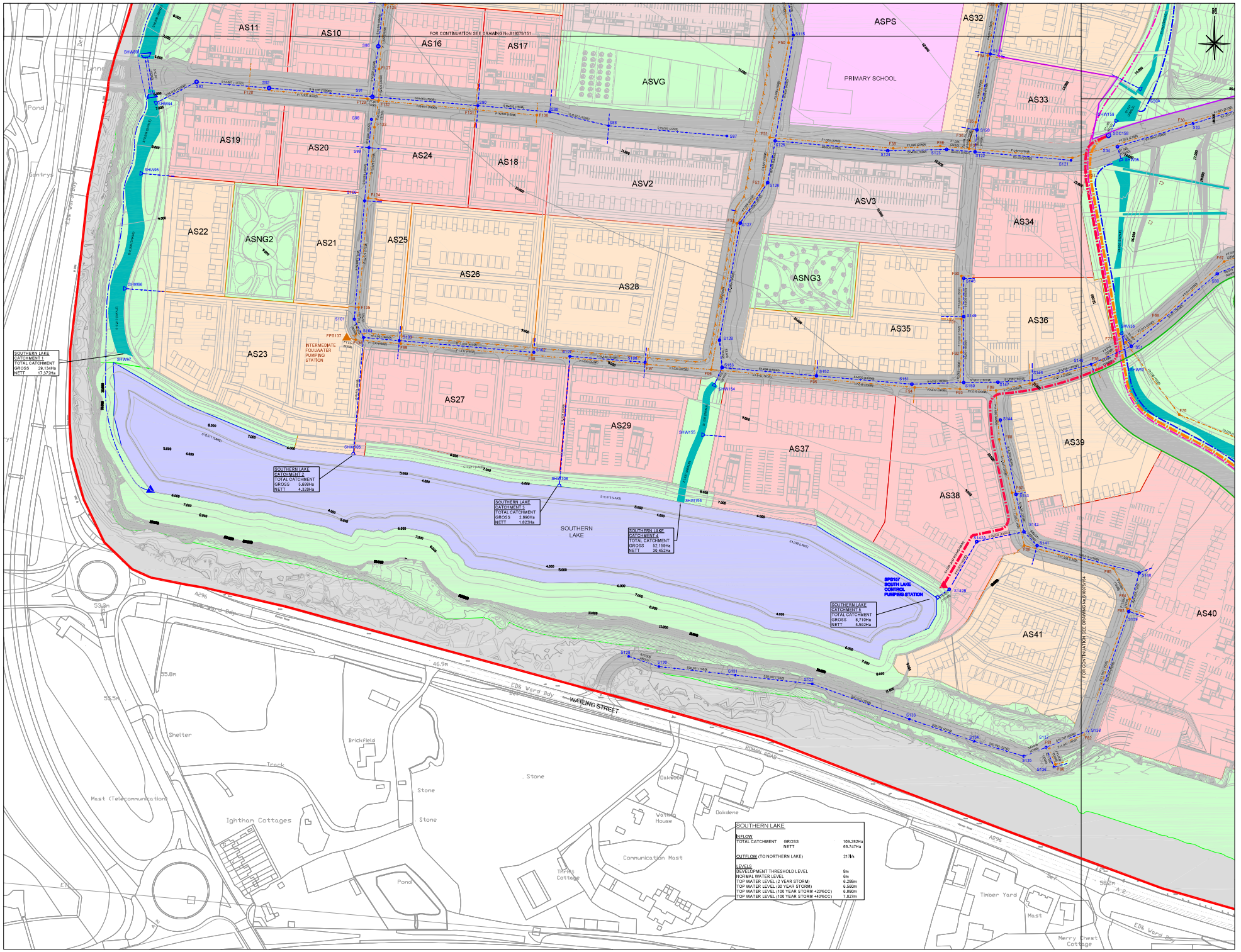
Drawing
DRAINAGE STRATEGY
SHEET 2

Scales	1:1000	At original size	A0
Drawn	RDT	Checked	DCT
Date	16.12.18		

Status PRELIMINARY

Drawing No. B18075/152 Rev. P1



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2.6. ALL ADOPTABLE FOUL DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 6th EDITION, THE CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 6TH EDITION AND ANY SUBSEQUENT AMENDMENTS TO THESE DOCUMENTS.
2.7. NON-ADOPTED DRAINAGE INCLUDING SWALES AND PONDS SHALL REMAIN THE RESPONSIBILITY OF THE DEVELOPER OR THEIR NOMINEES UNLESS OTHERWISE AGREED TO AN OPTIONAL BODY BY SEPARATE AGREEMENT.
2.8. MANHOLE CHAMBER SIZES SHALL COMPLY WITH THE REQUIREMENTS OF 'SEWERS FOR ADOPTION 6th EDITION AND ANY SUBSEQUENT ADDENDUM INFORMATION PROVIDED BY EMAIL PART H OF THE BUILDING REGULATIONS OF THE DESIGN MANUAL FOR ROADS AND BRIDGES, AND WHERE IN THE PREFERENCE OF THE ADOPTING AUTHORITY.
2.9. HIGHWAY DRAINS SHALL BE ADOPTED UNDER SECTION 38 OF THE HIGHWAYS ACT 1980.
2.10. ALL MANHOLE TOP COVERS AND GRATES SHALL HAVE A MINIMUM CLEARANCE OF 150 MEASURED FROM THE TOP OF THE KERB SHALL TO THE FINISHED ROAD SURFACE.
2.11. ALL DRAINAGE UNDER PROPOSED ADOPTABLE ROADS AND FOOTWAYS SHALL BE A MINIMUM 150mm DIAMETER.
2.12. THE DRAINAGE LAYOUT SHOWN IS BASED ON PROVIDED LEVELS AND THEREFORE SUBJECT TO SETTLING BASINS FORMED IN GRADIN BASE STEPS WITH WEIRS AS SHOWN ON ALL CONTROL MANHOLES TO FLOW AND SHALL BE MARK FIRST FLUSH POLLUTANTS SHALL BE DIRECTED AT ALL HEADWALLS INTO PONDS.
2.14. ATTENUATION PONDS/BASINS HAVE BEEN DESIGNED AS SHOWN IN THE DRAINAGE STRATEGY REPORT.
2.15. THE FIRST 5mm OF STORM WATER SHALL BE RETAINED IN SWALES BY WAY OF THE SWALE OUTLET ORIFICE/WEIR ABOVE BED LEVEL. IF THE SWALE GRADIENT IS GREATER THAN 1:10 THEN A SWALE CASCADE ARRANGEMENT SHALL BE PROVIDED.
2.16. WHERE THERE ARE NO SEDIMENT AREAS, NO BUILDINGS, TREES, PLANTING, WALLS, PRIVATE DRAINS, SOAKAWAYS OR OTHER STRUCTURES ARE PERMITTED UNLESS AGREED WITH THE WATER COMPANY'S CERTAIN SPECIES OF SHRUB AND HEDGING MAY BE ACCEPTABLE IN CASH/DRY AREAS BY AGREEMENT WITH THE ADOPTING AUTHORITY.
2.17. URBAN CREEP OF 5% HAS BEEN ALLOWED FOR IN THE % IMPERMEABLE FOR ALL RESIDENTIAL PLOTS.

KEY CATCHMENTS

- HIGHWAY CORRIDOR (70% IMPERMEABLE)
- LOW DENSITY HOUSING (40% IMPERMEABLE) (SEE NOTE 2J)
- MEDIUM DENSITY HOUSING (60% IMPERMEABLE) (SEE NOTE 2J)
- HIGH DENSITY HOUSING (80% IMPERMEABLE) (SEE NOTE 2J)
- SCHOOLS/MTH (60% IMPERMEABLE) (SEE NOTE 2J)
- MIXED USE DEVELOPMENT (TO CATCHMENT REF (60% IMPERMEABLE))
- GREEN AREAS (20% IMPERMEABLE)
- LAKES (100% IMPERMEABLE)
- AREA NOT DIRECTLY CONTRIBUTING TO NETWORK

AL30 CATCHMENT REF (SEE NOTE 2J)

KEY DETAIL

- SURFACE WATER SEWER AND CHAMBER WITH REFERENCES
- FOUL WATER SEWER AND CHAMBER WITH REFERENCES
- SWALE (SEE NOTE 2J)
- CASTLE HILL LAKE MAIN AND PUMPING STATION
- SOUTH LAKE MAIN AND PUMPING STATION
- NORTH LAKE MAIN AND PUMPING STATION
- EFFLUENT TREATMENT MAIN AND PUMPING STATION
- RECIRCULATION MAIN AND PUMPING STATION
- EXTENT OF CATCHMENT TO CASTLE HILL LAKE
- EXTENT OF CATCHMENT TO NORTHERN LAKE
- SW OUTFALL HEADWALL TO LAKE (SEE NOTE 2.10)

Rev.	Amendments	Date	By
P1	INITIAL ISSUE	19.12.18	RDT

Revisions

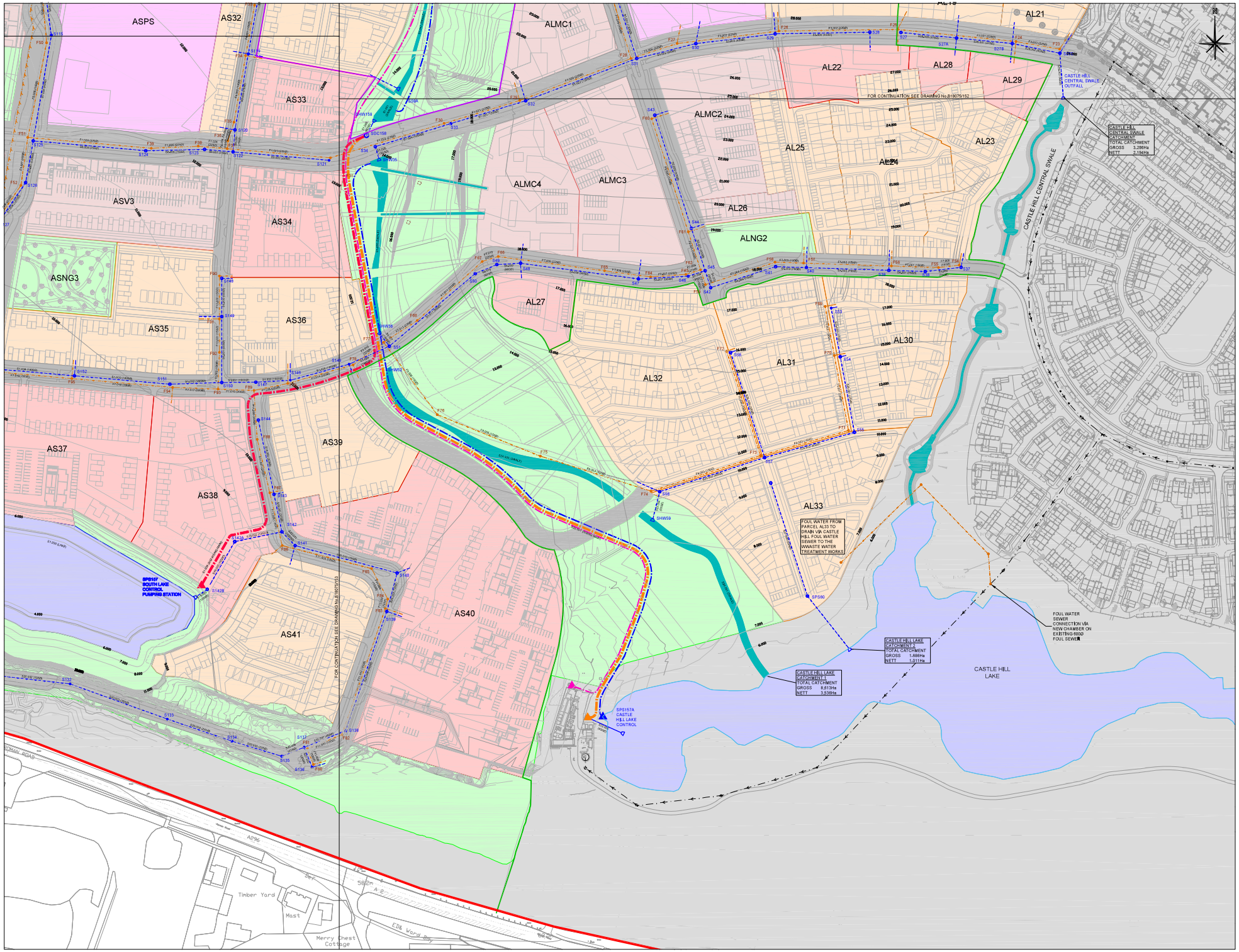
PATRICK PARSONS
Built Environment | Engineering | Consultancy
40 St Paul's Square
Birmingham
B3 1FQ
United Kingdom
T. +44 (0)121 237 5100
E. info@patrickparsons.co.uk
W. www.patrickparsons.co.uk

Client
EASTERN QUARRY LTD.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
MAIN INFRASTRUCTURE

Drawing
DRAINAGE STRATEGY
SHEET 3

Scale 1:1000 At original size A0
Drawn RDT Checked DCT
Date 18.12.18
Status PRELIMINARY
Drawing No. B18075/153 Rev. P1



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0.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF PATRICK PARSONS LTD.

1.2. DO NOT SCALE FROM THIS DRAWING.

1.2. LOCATIONS OF ALL EXISTING SERVICES ARE TO BE CONFIRMED & PROVED TO THE SATISFACTION OF THE ENGINEER PRIOR TO WORKS.

1.4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT PATRICK PARSONS LTD DRAWINGS & SPECIFICATIONS.

DRAINAGE NOTES

2.1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE LANDSCAPE MANAGEMENT PLANS.

2.2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAINAGE STRATEGY DRAWINGS No. B18075/151 TO 154.

2.3. FOR DETAILS OF TYPICAL SWALE CROSS SECTIONS REFER TO CATCHMENT SCHEDULE DRAWING No. B18075/155.

2.4. WATER WITHIN THE PONDS SHALL BE RECIRCULATED TO THE HEAD OF SWALES TO MAINTAIN A FLOW WITHIN THE SWALES AND TO PROVIDE ADDITIONAL TREATMENT. FILTER STRIPS SHALL BE PROVIDED ADJACENT TO ROADS RUN NEXT TO SWALES. SWALES SHALL BE INTERSPERSED WITH PONDS, CASCADES, WETLAND AREAS AND MARGINAL PLANTING OF REEDS ETC. ADDITIONAL SUDS FEATURES MAY BE ADDED AT THE DETAILED DESIGN STAGE IN ORDER TO PROVIDE BETTER TREATMENT TO SURFACE WATER RUNOFF IN ACCORDANCE WITH THE SUDS MANUAL CIRIA C753.

2.5. DEVELOPMENT DRAINAGE SHALL WHERE REQUIRED BE DESIGNED AND ADOPTED UNDER SECTION 104 OF THE WATER INDUSTRY ACT 1991 AND SHALL COMPLY WITH DESIGN GUIDANCE LAID DOWN BY THE UK WATER UTILITIES SEWERS FOR ADOPTION 8TH EDITION (OR AS REQUIRED), SUCH SEWERS SHALL BE LAID OUT WITH TRADITIONAL WATER CARRIAGE JOINTS AND MANHOLES. WHERE APPROPRIATE ALTERNATIVE METHODS ARE REQUIRED, ALL ADOPTABLE DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH 'SEWERS FOR ADOPTION 8TH EDITION' THE LOCAL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 8TH EDITION AND ANY SUBSEQUENT AMENDMENTS TO THESE DOCUMENTS.

2.7. NON-ADOPTED DRAINAGE INCLUDING SWALES AND PONDS SHALL REMAIN THE RESPONSIBILITY OF THE DEVELOPER OR SUBSEQUENT OWNERS UNLESS OTHERWISE AGREED TO AN OPTIONAL BASIS BY SEPARATE AGREEMENT.

2.8. MANHOLE CHAMBER SIZES SHALL COMPLY WITH THE REQUIREMENTS OF 'SEWERS FOR ADOPTION 6th EDITION' AND ANY SUBSEQUENT ADDENDUM INFORMATION APPROVED BY BWL. PART H OF THE BUILDING REGULATIONS OR THE DESIGN MANUAL FOR ROADS AND BRIDGES, WHICHEVER IS THE PREFERENCE OF THE ADOPTING AUTHORITY.

2.9. HIGHWAY DRAINS SHALL BE ADOPTED UNDER SECTION 38 OF THE HIGHWAYS ACT 1980.

2.10. ALL MANHOLE COVERS AND GRATINGS SHALL HAVE A MINIMUM CLEAR OPEN AREA MEASURED FROM THE TOP OF THE FRAME SHALL TO THE FINISHED ROAD SURFACE.

2.11. ALL DRAINAGE UNDER PROPOSED ADOPTABLE ROADS AND FOOTWAYS SHALL BE A MINIMUM 150mm DIAMETER.

2.12. THE DRAINAGE LAYOUT SHOWN IS BASED ON PROVISIONAL LAYOUTS AND THEREFORE FINAL CIVIL SITE LEVELS BASED FORMED IN ORDER TO ENSURE SUFFICIENT COVER AND GRADIENTS ARE ACHIEVED TO FLOW AND TO ENSURE MANHOLE TOPS ARE FLUSH.

2.13. POLLUTANTS SHALL NOT BE DISCHARGED AT ALL TO SOAKAWAYS OR INTO POWER.

2.14. ATTENUATION PONDS/BASINS HAVE BEEN DESIGNED TO RESTRICT RUNOFF RATES TO GREENFIELD RUNOFF RATES.

2.15. THE FIRST 5mm OF STORM WATER SHALL BE RETAINED IN SWALES BY MEANS OF THE SWALE OUTLET ORIFICE 50mm ABOVE BED LEVEL. IF THE SWALE GRADIENT IS GREATER THAN 1:20 THEN A SWALE CASCADE ARRANGEMENT SHALL BE PROVIDED.

2.16. TO PREVENT SEDIMENT AREAS NOT BUILDINGS, TREE PLANTING, WALLS, PRIVATE DRAINS, MANHOLES OR OTHER STRUCTURES ARE PERMITTED UNLESS AGREED WITH THE WATER COMPANY. CERTAIN SPECIES OF SHRUB AND HEDGING MAY BE ACCEPTABLE IN CASH/KENT AREAS BY AGREEMENT WITH THE ADOPTING AUTHORITY.

2.17. URBAN CREEP OF 5% HAS BEEN ALLOWED FOR IN THE % IMPERMEABLE FOR ALL RESIDENTIAL PLOTS.

KEY: CATCHMENTS

- HIGHWAY CORRIDOR (70% IMPERVEABLE)
- LOW DENSITY HOUSING (40% IMPERVEABLE) (SEE NOTE 2J)
- MEDIUM DENSITY HOUSING (60% IMPERVEABLE) (SEE NOTE 2J)
- HIGH DENSITY HOUSING (80% IMPERVEABLE) (SEE NOTE 2J)
- SCHOOLS WITH (60% IMPERVEABLE) (SEE NOTE 2J)
- MIXED USE DEVELOPMENT WITH CATCHMENT REF (90% IMPERMEABLE)
- GREEN AREAS (20% IMPERVEABLE)
- LAKES (100% IMPERVEABLE)
- AREA NOT DIRECTLY CONTRIBUTING TO NETWORK

AL30 CATCHMENT REF (SEE NOTE 2J)

KEY: GENERAL

- SURFACE WATER SEWER AND CHAMBER WITH REFERENCES
- FOUL WATER SEWER AND CHAMBER WITH REFERENCES
- SWALE (SEE NOTE 2J)
- CASTLE HILL LAKE MAIN AND PUMPING STATION
- SOUTH LAKE MAIN AND PUMPING STATION
- NORTH LAKE MAIN AND PUMPING STATION
- EFFLUENT TREATMENT MAIN AND PUMPING STATION
- RECIRCULATION MAIN AND PUMPING STATION
- EXTENT OF CATCHMENT TO CASTLE HILL LAKE
- EXTENT OF CATCHMENT TO NORTH LAKE
- SW OUTFALL HEADWALL TO LAKE (SEE NOTE 2.13)

Rev.	Amendments	Date	By
P1	INITIAL ISSUE	16.12.18	RDT

Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy

40 St Paul's Square
Birmingham
B3 1RQ
United Kingdom

T. +44 (0)121 237 5100
E. info@patrickparsons.co.uk
W. www.patrickparsons.co.uk

Client
EASTERN QUARRY LTD.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
MAIN INFRASTRUCTURE

Drawing
DRAINAGE STRATEGY
SHEET 4

Scale 1:1000 At original size A0

Drawn RDT Checked DCT
Date 16.12.18

Status PRELIMINARY

Drawing No. B18075/154 Rev. P1

Appendix C

Phase 4 Drainage Strategy

N

NOTES:

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3. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METERS UNLESS OTHERWISE STATED.
4. ALL DIMENSIONS, LEVEL AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF WORKS.
5. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PRIOR PERMISSION FROM THE ENGINEER.
6. ANY WORKS OUTSIDE RED SITE BOUNDARY ARE FOR INFORMATION PURPOSES ONLY. UNLESS SPECIFICALLY NOTED, ALL WORKS OUTSIDE THE SITE BOUNDARY WILL BE UNDERTAKEN BY OTHERS UNDER A SEPARATE.
7. ALL EXISTING SERVICE ROUTES HAVE BEEN TRANSCRIBED FROM THE RESPECTIVE UNDERTAKERS RECORDS AND AS SUCH NO RESPONSIBILITY IS ACCEPTED BY ARDENT CONSULTING ENGINEERS FOR THE ACCURACY OF ROUTES SHOWN.
8. THE AVOIDANCE AND PROTECTION OF SERVICES DURING THE WORKS IS THE RESPONSIBILITY OF THE CONTRACTOR.
9. THE CONTRACTOR IS REMINDED OF HIS OBLIGATION TO VERIFY THE ROUTE OF ALL SERVICES ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS.
10. THE CONTRACTOR SHOULD ALLOW FOR ANY NECESSARY LIAISON WITH THE STATUTORY UTILITIES DURING THE COURSE OF THE WORKS TO AVOID ANY DISRUPTION TO RETAINED SERVICES.
11. THE CONTRACTOR SHOULD NOTE THAT THE SERVICES SHOWN ARE NOT TO BE CONSIDERED EXHAUSTIVE. PRIVATE SERVICES MAY BE PRESENT WITHIN THE LIMIT OF WORKS AND CARE SHOULD BE TAKEN TO LOCATE AND AVOID THESE DURING CONSTRUCTION.

KEY:

- PARCEL 10 BOUNDARY EXTENTS
- PROPOSED MAIN DRAINAGE SW SEWER
- PROPOSED MAIN DRAINAGE FW SEWER
- SURFACE WATER EXCEEDANCE ROUTE
- PROPOSED STRATEGIC SW SEWER
- PROPOSED STRATEGIC FW SEWER
- PROPOSED HEADWALL FOR MAIN DRAINAGE
- PROPOSED HIGHWAY CONTOURS OUTSIDE OF PARCEL 10
- PROPOSED ROAD CONTOURS (0.02m)
- PROPOSED FOUL RISING MAIN
- FFL: 9.675 PROPOSED FINISHED FLOOR LEVEL
- INDICATIVE FOUL PLOT SEWER RUN

INFORMATION SUMMARY

INFORMATION TYPE	SOURCE	REFERENCE	REVISION & DATE
SITE LAYOUT	BPTW ARHICTECTS LLP	ASH-BPTW-S01-ZZ-DS-A-0304	13/08/2025 REV P17
PROPOSED EARTHWORKS LEVELS	PATRICK PARSONS	PROPOSED EARTHWORKS CONTOURS 030624	DATED 03/06/2024
LANDSCAPING PROPOSALS	PEGASUS ARCHITECTS LTD.	P24-1771 ILLUSTRATIVE LANDSCAPE MASTERPLAN	RECEIVED 15/07/2025

ALL INFORMATION SHOWN OUTSIDE THE RED LINE BOUNDARY IS INDICATIVE AND SHOWN FOR INFORMATION ONLY.

DESIGN OF PUMP AND RISING MAIN TO BE COMPLETED BY OTHERS

FW STUB FOR FUTURE PHASE TOTAL UNITS: 37 IL: 6.26

SW STUB FOR FUTURE PHASE (ASSUMED 65% IMPERMEABLE AREA) APPROXIMATE IMPERMEABLE AREA: 0.50ha IL: 6.733

0m 5m 25m

Scale: 1:500 @ A1

Rev	Description	Drn	Chk	App	Date
P01	FIRST ISSUE	PM	AW	BB	15.08.25

Purpose: PRELIMINARY

Status: NOT YET APPROVED

ARDENT | CONSULTING ENGINEERS
AN EMPLOYEE OWNED COMPANY
Third Floor
The Hallmark Building
52-56 Leadenhall Street
London
EC3M 5JE
Tel: 020 7680 4088
Web: www.ardent-ce.co.uk
E-mail: enquiries@ardent-ce.co.uk

Client: EASTERN QUARRY LTD

Project Title: EASTERN QUARRY (ASHMERE) PARCEL 10

Drawing Title: PROPOSED DRAINAGE STRATEGY

Drawn by	Checked by	Approved by	Revision
PM	AW	BB	P01

Scale: 1:500@A1 | Date: MAY 2025

Drawing Number: 173535-ACE-XX-00-DR-C-0101

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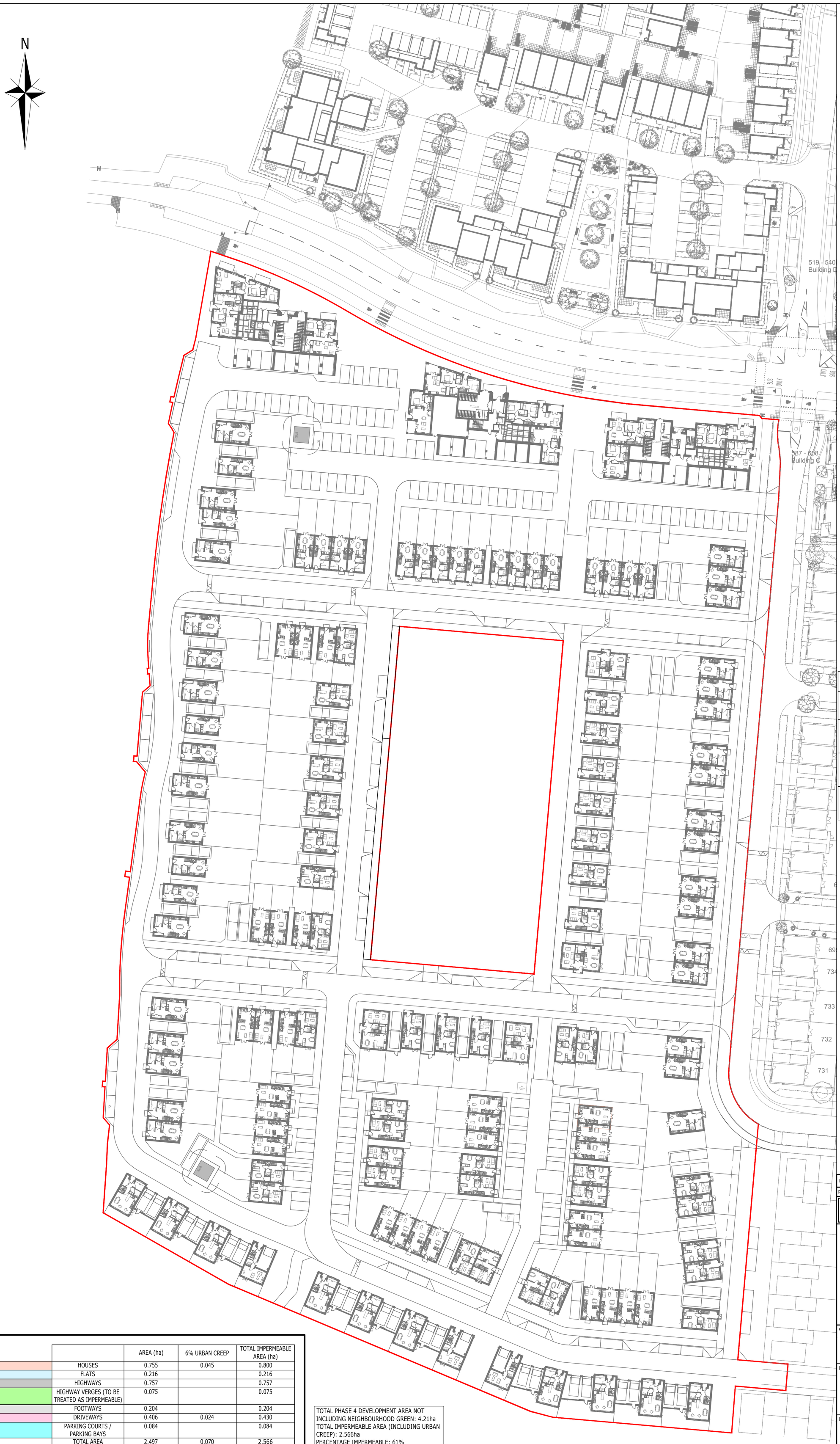
Appendix D

Impermeable Areas Plan



NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATION, INC. RISK ASSESSMENTS (SEE CDM NOTES) AND ALL OTHER RELATED DRAWINGS ISSUED BY THE ENGINEER.
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3. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES UNLESS OTHERWISE STATED.
4. ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
5. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PRIOR PERMISSION FROM THE ENGINEER.
6. ANY WORKS OUTSIDE RED SITE BOUNDARY ARE FOR INFORMATION PURPOSES ONLY. UNLESS SPECIFICALLY NOTED, ALL WORKS OUTSIDE THE SITE BOUNDARY WILL BE UNDERTAKEN BY OTHERS UNDER A SEPARATE CONTRACT.

CDM NOTES:

1. THE ATTENTION OF THE CLIENT AND THE PRINCIPAL CONTRACTOR IS DRAWN TO THE FOLLOWING POTENTIAL RISKS IN CONJUNCTION WITH THE PROPOSED ON-SITE AND OFF-SITE WORKS AS DESIGNED FOR THIS PROJECT:
2. WORKS IN THE VICINITY OF LIVE SERVICES WILL BE NECESSARY AND THE ADVICE OF ALL STATUTORY SERVICE COMPANIES MUST BE SOUGHT BEFORE ANY WORKS COMMENCE.
3. WORKS WITHIN AND ABUTTING THE EXISTING HIGHWAY WILL ENTAIL TRAFFIC HAZARDS AND ALL APPROPRIATE SAFETY MEASURES INCLUDING BARRIERS, SIGNS AND LIGHTING MUST BE UNDERTAKEN TO THE APPROVAL OF THE LOCAL AUTHORITY, THE HIGHWAY AUTHORITY AND THE POLICE.
4. HAZARDOUS MATERIALS INCLUDING CEMENT AND BITUMINOUS MATERIALS ARE SPECIFIED AND THE MANUFACTURER'S ADVICE ON SAFE HANDLING PROCEDURES MUST BE OBTAINED AND MADE CLEAR TO ALL OPERATIVES.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING ALL EXISTING SERVICES WITHIN THE VICINITY OF THE WORKS AND ENSURE THESE ARE PROTECTED THROUGHOUT THE DURATION OF THE WORKS. ALL UTILITY PLANT SHOULD BE CLEARLY MARKED ON THE GROUND PRIOR TO COMMENCEMENT OF THE WORKS.
6. THE CONTRACTOR MUST ENSURE ALL WORKING AREAS ARE FULLY SECURE.

KEY

SITE BOUNDARY

INFORMATION SUMMARY

INFORMATION TYPE	SOURCE	REFERENCE	REVISION & DATE
SITE LAYOUT	BPTW ARHICTECTS LLP	ASH-BPTW-S01-ZZ-DS-A-0304	13/08/2025 REV P17
PROPOSED EARTHWORKS LEVELS	PATRICK PARSONS	PROPOSED EARTHWORKS CONTOURS 030624	DATED 03/06/2024
LANDSCAPING PROPOSALS	PEGASUS ARCHITECTS LTD.	P24-1771 ILLUSTRATIVE LANDSCAPE MASTERPLAN	RECEIVED 15/07/2025

ALL INFORMATION SHOWN OUTSIDE THE RED LINE BOUNDARY IS INDICATIVE AND SHOWN FOR INFORMATION ONLY.

ALL IMPERMEABLE AREAS PART OF THE SECONDARY ROAD HAVE ACCOUNTED FOR WITHIN PARCEL 9.

0m 5m 25m

Scale: 1:500 @ A1

		AREA (ha)	6% URBAN CREEP	TOTAL IMPERMEABLE AREA (ha)
	HOUSES	0.755	0.045	0.800
	FLATS	0.216		0.216
	HIGHWAYS	0.757		0.757
	HIGHWAY VERGES (TO BE TREATED AS IMPERMEABLE)	0.075		0.075
	FOOTWAYS	0.204		0.204
	DRIVEWAYS	0.406	0.024	0.430
	PARKING COURTS / PARKING BAYS	0.084		0.084
	TOTAL AREA	2.497	0.070	2.566

TOTAL PHASE 4 DEVELOPMENT AREA NOT INCLUDING NEIGHBOURHOOD GREEN: 4.21ha
TOTAL IMPERMEABLE AREA (INCLUDING URBAN CREEP): 2.566ha
PERCENTAGE IMPERMEABLE: 61%

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Rev	Description	Drn	Chk	App	Date
P01	FIRST ISSUE	JTM	AW	BB	26.08.25

Purpose: PRELIMINARY

Status: NOT YET APPROVED

ARDENT | CONSULTING ENGINEERS
AN EMPLOYEE OWNED COMPANY
Third Floor
The Hallmark Building
52-56 Leadenhall Street
London
EC3M 5JE
Tel: 020 7680 4088
Web: www.ardent-ce.co.uk
E-mail: enquiries@ardent-ce.co.uk

Client: EASTERN QUARRY LTD

Project Title: EASTERN QUARRY (ASHMERE) PHASE 4

Drawing Title: IMPERMEABLE AREAS

Drawn by	Checked by	Approved by	Revision
JTM	AW	BB	P01

Scale: 1:500@A1 | Date: AUGUST 2025

Drawing Number: 173535-ACE-XX-00-DR-C-0151

user name: peter.maddock

Appendix E

KCC Correspondence

Caroline Barker
Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Cstle Hill
Ebbsfleet
Kent
DA10 1EE

Flood and Water Management
Invicta House
Maidstone
Kent
ME14 1XX
Website: www.kent.gov.uk/flooding
Email: suds@kent.gov.uk
Tel: 03000 41 41 41
Our Ref: EBBS/2019/076728
Date: 3 December 2019

Application No: EDC/19/0196

Location: Ashmere (Phase 1) Eastern Quarry Watling Street Swanscombe Kent

Proposal: Reserved matters application (relating to access, appearance, landscaping, layout and scale) for 281 dwellings and associated infrastructure including roads and surface water attenuation, pursuant to outline planning application EDC/17/0048.

Thank you for your consultation on the above referenced planning application.

Kent County Council as Lead Local Flood Authority have the following comments:

1. Whilst we are satisfied with the principles proposed for dealing with surface water from Phase 1 and that the layout and scale therefore are acceptable we have concerns that prevent us from being able to recommend the acceptance of reserved matters.

2. The drainage technical note states that "As a result of the evolving nature of the Phase 1 development site layout the Gross catchment area has increased. However, the percentage of impermeable area has decreased and as a result the impermeable area within the Phase 1 Development Parcel is below the allowances made within the WMP".

   Table 3-2 gives the previously agreed total net impermeable area as 2.492Ha, yet table 3-3 gives the new impermeable area (including urban creep allowance) as 2.663 Ha, an increase of 1,710m2. This requires clarification and should it be that there is an increase to the impermeable area it will be necessary to demonstrate that this can be accounted for within the strategic network.

3. Impermeable Area Plan - 173531-003/B appears to be clear but it does not actually have the shaded colours shown on the key in the drawing.

4. No discharge rates for the site have been given, as part of the pre-application discussion we requested that any outlets into the lake/swale system are clearly shown with flow rates and volumes on the drainage strategic plan. This was to ensure that it can be demonstrated that the proposed rates for each phase of the development comply with the Master Strategy and that therefore sufficient capacity exists and be drawn down from for future phases of development.

Aside from the specific comments above, we have recently received an application regarding the proposed fast track tunnel adjacent to the Ashmere site (KCC/DA/0232/2019) and whilst not of immediate impact to the phase 1 development we have concerns that will require consideration with regards to the wider network and particularly catchment area AS11.

The overriding drainage strategy for the whole of the Ashmere development seems to conflict with the proposals shown for the tunnel, which raises concerns for both developments.

The tunnel's proposed highway and drainage connections are not as shown within the Ashmere Drainage Strategy, which appears to show the utilisation of the existing tunnels. This results in the proposed location of the connecting carriageway to the Eastern Arm of the tunnel, when referring to the ADS, seeming to be in conflict with a residential area (Catchment Area AS11).

This issue will require to be resolved prior to either the approval of application KCC/DA/0232/2019 or any future application that could be impacted by the tunnel proposals as part of the Ashmere development.

This response has been provided using the best knowledge and information submitted as part of the planning application at the time of responding and is reliant on the accuracy of that information.

Yours faithfully,

Neil Clarke
Senior Flood Risk Project Officer
Flood and Water Management

Andrew Wren

From: Ben Brooks
Sent: 29 January 2020 11:55
To: Neil.Clarke@kent.gov.uk
Cc: Nick Challis
Subject: RE: Response To Application Number EBBS/2018/069834 at Western Village, Eastern Quarry, Ebbsfleet
Attachments: 173531-003.pdf; Ashmere.pdf

Neil,

Sorry for the delay,

I have provided some notes from our meting below (numbers refer to your original comments – attached for reference) and attached a pdf copy of the Catchment Plan.

Please let me know if you need anything further.

1. The discrepancy in areas was borne of changes to the plot boundaries that were current when the drainage strategy was produced, but have been adjusted as the scheme evolved. The total area draining to the strategic network would not increase, as any increase in phase 1 area would result in a decrease in area from subsequent phases due to the development area being finite.
3. PDF copy of the Catchment Plan attached as agreed, the hatching is clear on this version and shows the various types of surfaces across the development.
4. Future RM applications will be assessed by comparing the contributing areas to that shown in the approved strategy rather than peak flows generated by those areas. This was because the critical storm for smaller catchments will generally be longer duration storms that would be the critical storm for the site as a whole. Summing the peak flows for all of the sub-catchments would therefore result in a larger flow than would be produced for the critical storm of the site as a whole, leading to flows from later phases being overly restricted if allowances were assessed based on peak flows rather than contributing areas.

The issue with the Fastrack was, as point 2 above, borne of changes to the parcel boundaries and development layout post WMP/drainage strategy approval. It was agreed that the approved drainage strategy would be maintained for general reference purposes when it came to assessing RM applications against the principles of the strategy, but any discrepancies between the layouts shown on the RM applications and that shown on the drainage strategy would be dealt with during each RM application.

Many Thanks,

Ben Brooks
Associate

ARDENT
CONSULTING ENGINEERS

Third Floor, The Hallmark Building, 52-56 Leadenhall Street, London EC3M 5JE

T 020 7680 4088

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From: Neil.Clarke@kent.gov.uk <Neil.Clarke@kent.gov.uk>
Sent: 18 December 2019 15:38
To: Ben Brooks <bbrooks@ardent-ce.co.uk>
Subject: FW: Response To Application Number EBBS/2018/069834 at Western Village, Eastern Quarry, Ebbsfleet

Ben,

I've a favour to ask - would you be able to provide me with a statement to my planning response or a copy of your notes from our meeting?

Also don't forget to send me the shaded impermeable area plan.

Many Thanks

Neil Clarke | Senior Flood Risk Project Officer | Flood & Water Management | Kent County Council | Invicta House, County Hall, Maidstone ME14 1XX |

As Lead Local Flood Authority (LLFA) for the County, we have become a statutory consultee in planning to promote the provision of Sustainable Drainage Systems. You can find out more by visiting: http://www.kent.gov.uk/waste-planning-and-land/flooding-and-drainage/sustainable-drainage-systems Please consider the environment before printing this email

---

From: Clarke, Neil - GT EPE
Sent: 18 December 2019 15:01
To: Ben Brooks <bbrooks@ardent-ce.co.uk>
Subject: RE: Response To Application Number EBBS/2018/069834 at Western Village, Eastern Quarry, Ebbsfleet

Ben,

As promised please find response attached.

Kindest Regards

Neil Clarke | Senior Flood Risk Project Officer | Flood & Water Management | Kent County Council | Invicta House, County Hall, Maidstone ME14 1XX | Internal: 413569 | External: 03000 413569 | www.kent.gov.uk |

As Lead Local Flood Authority (LLFA) for the County, we have become a statutory consultee in planning to promote the provision of Sustainable Drainage Systems. You can find out more by visiting: http://www.kent.gov.uk/waste-planning-and-land/flooding-and-drainage/sustainable-drainage-systems

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From: Ben Brooks <bbrooks@ardent-ce.co.uk>
Sent: 18 December 2019 13:48
To: Clarke, Neil - GT EPE <Neil.Clarke@kent.gov.uk>
Subject: RE: Response To Application Number EBBS/2018/069834 at Western Village, Eastern Quarry, Ebbsfleet

Neil,

No problem.

If you are able to provide me with a copy of your response it would be great.

Many Thanks,

Ben Brooks
Associate

ARDENT
CONSULTING ENGINEERS

Third Floor, The Hallmark Building, 52-56 Leadenhall Street, London EC3M 5JE

T 020 7680 4088

www.ardent–ce.co.uk

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From: Neil.Clarke@kent.gov.uk <Neil.Clarke@kent.gov.uk>
Sent: 18 December 2019 13:13
To: Ben Brooks <bbrooks@ardent-ce.co.uk>
Subject: RE: Response To Application Number EBBS/2018/069834 at Western Village, Eastern Quarry, Ebbsfleet

Hi Ben,

I'm afraid I am not going to have time to issue the formal minutes from the meeting but I am happy to send out our recommend to approve the condition response to the LPA if this helps?

Regards

Neil Clarke | Senior Flood Risk Project Officer | Flood & Water Management | Kent County Council | Invicta House, County Hall, Maidstone ME14 1XX | Internal: 413569 | External: 03000 413569 | www.kent.gov.uk |

As Lead Local Flood Authority (LLFA) for the County, we have become a statutory consultee in planning to promote the provision of Sustainable Drainage Systems. You can find out more by visiting: http://www.kent.gov.uk/waste-planning-and-land/flooding-and-drainage/sustainable-drainage-systems

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From: Nicholas, Becca - GT EPE <Becca.Nicholas@kent.gov.uk>
Sent: 17 December 2019 17:12
To: Clarke, Neil - GT EPE <Neil.Clarke@kent.gov.uk>
Subject: FW: Response To Application Number EBBS/2018/069834 at Western Village, Eastern Quarry, Ebbsfleet

Hiya Neil,

Another email for you:

From: Ben Brooks <bbrooks@ardent-ce.co.uk>
Sent: 17 December 2019 17:05
To: SUDS - GT <SUDS@kent.gov.uk>
Subject: RE: Response To Application Number EBBS/2018/069834 at Western Village, Eastern Quarry, Ebbsfleet

FAO Neil Clarke,

Neil – I am being chased to resolve the KCC holding objection, are you able to confirm when you will be in a position to issue revised response to EDC?

Many Thanks,

Ben Brooks
Associate

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From: Ben Brooks
Sent: 16 December 2019 19:33
To: SUDS@kent.gov.uk
Subject: Response To Application Number EBBS/2018/069834 at Western Village, Eastern Quarry, Ebbsfleet

FAO Neil Clarke,

Neil,

Good to see you again on Friday. Just a quick note to confirm the meeting fee has been paid.

If you are able to provide me with a copy of your revised consultation response once issued this week it would be much appreciated.

Many Thanks,

Ben Brooks
Associate

ARDENT
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Third Floor, The Hallmark Building, 52-56 Leadenhall Street, London EC3M 5JE

T 020 7680 4088

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PRE-APPLICATION MEETING

Meeting Notes

Date/Time:	24 September 2018, 14:00 – 16:00
Location:	Higham Room, 1st Floor, Invicta House, County Hall
Attendees:	Ardent – Fraser Yorston, Ben Brooks, Countryside – Tim Haines Patrick Parson – Richard Tant
Site Location:	Western Village, Eastern Quarry, Ebbsfleet
LPA District reference:	N/A
KCC reference:	EBBS/2018/069834

Discussion Items

1. Development/planning background
   - Variation of conditions attached to 12/01451 (EDC/17/0048 application) – provided for variation in layout for Western Village area, KCC LLFA highlighted importance of design for primary network with consideration of phased delivery – KCC reference EBBS/2017/060180/3, 5 Dec 2017; application includes Water Management Plan (updated 13 November 2017)
   - Reserved matters application for Western Village, KCC commented as LLFA 4 September 2018 (EDC/18/0086 application) – KCC LLFA recommended approval, KCC reference EBBS/2018/069030

2. Surface Water Management
   - Defined by Water Management Plan (updated 13 November 2017)
   - Lake level maintained at specific level; all assumptions to comply with discharge rate of 230 l/s. "Green lung" is maintained, as north south line within development masterplan. Swales to north and south to accept flows from urban area.
   - Creep shall be applied over entirety of site but as an agreed constant for ease of calculations; KCC Drainage and Planning Policy Statement dwellings ≤ 25 dph, 10%, 30 dph ay 8%, 35 dph at 6% etc).
   - Design rainfall shall be based upon FEH.
   - Runoff calculations shall model impermeable areas for drainage design. Open space areas are assumed not to contribute to the positive drainage system.
   - EDC have indicated a preference for inclusion of trees; KCC would encourage design team to consider inclusion of tree pits which have attenuation capacity within public realm areas.

KCC agree that:

a) Creep allowance may be calculated based upon relevant areas i.e. reduction due to highway areas and calculated upon an average density as applied to the entirety of the site.

b) Impermeable areas shall be utilised in positive drainage design; however, if any greenfield areas due to topography or highway arrangements are found to contribute to the drainage system, then they should be included within design.

KCC require that:

c) FEH is utilised within drainage design unless an amended value of FSR M5-60 is utilised.

d) An overall drainage strategic plan shall be provided with discharge points clearly shown and outfall flow rates noted on a parcel basis.

3. Drainage Delivery

- Strategic drainage delivery to be provided for subsequent phased build-out; area masterplan will be submitted and will include spine drainage.

KCC require that:

e) Future submissions for drainage shall clearly show contributions from phased parcels into the strategic system by noting impermeable areas assumed for each phase to provide for flexibility over delivery time scales.

f) Outlets into the lake/swale system are clearly shown with flow rates and volumes on the drainage strategic plan.

4. Water quality

- Original plan requirement is for inclusion of oil water separators; KCC would prefer careful consideration of drainage design to control water pollution.
- Interim plan will be provided during construction for management of sediments.

KCC require that:

g) Management plan for control of surface water quality during construction period.

h) The water quality assessment must make reference to CIRIA SuDS Manual Chapter 26 Water quality management: design methods to provide justification for management approach for water quality.

Follow-up Items No other matters; applicant will be submitting information to discharge conditions.

Appendix F

SuDS Treatment Methods

Pollution hazard indices for different land use classifications (land use shaded grey applicable for the development)

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, home zones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g. hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

Indicative SuDS mitigation indices for discharges to surface waters (SuDS components shaded grey applicable to this development)

	Mitigation indices		
Type of SuDS component	**TSS**	**Metals**	**Hydrocarbons**
Filter strip	0.4	0.4	0.5
Filter drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bio retention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Indicative minimum SuDS mitigation indices for discharges to surface waters

For surface water discharge from Residential Parking Areas and Low Traffic Roads >300 traffic movements/day			
	Required mitigation indices		
Source	**TSS**	**Metals**	**Hydrocarbons**
Medium	0.7	0.6	0.7
Highway Drainage Network			
Swale (mitigation index$_1$)	0.5	0.6	0.6
Pond (mitigation index$_2$)	0.7 x 0.5	0.7 x 0.5	0.5 x 0.5
Total	0.85	0.95	0.85
Check	+0.15	+0.35	+0.15

Total SuDS mitigation index = mitigation index$_1$ + (0.5 x mitigation index$_2$)

Appendix G

Maintenance Plan

Maintenance and Management

Any permeable paving and connecting pipework would be maintained by a management company set up by the developer. As construction has not yet commenced, the process of finalising the management company contract has not yet commenced. The developer will ensure that the measures as outlined below form part of the management company contract details, for the ongoing maintenance of all SuDS features on site.

The indicative maintenance requirements for each proposed SuDS component is given below. Taken from CIRIA report C753 "The SuDS Manual".

Drainage Pipes and Manholes

Maintenance schedule	Required action	Typical frequency
Regular Maintenance	Remove sediment and debris from inspection chambers and hydrobrake chambers	Annually
	Cleaning of gutters and any filters on downpipes	Annually
	Remove any root ingress	As required
Occasional Maintenance	CCTV survey of drains to check alignment, cracking and joint displacement	10 year intervals

From: KSLPlanning <KSLPLANNING@environment-agency.gov.uk>
Sent: 22 October 2025 10:31
To: EDC Planning <edcplanning@ebbsfleetdc.org.uk>
Subject: RE: Planning Application Consultation for application EDC/25/0183 at Ashmere Neighbourhood Green

FAO Harry Bailey

Dear Harry,

This Reserved Matters application does not raise new issues relating to groundwater protection or land affected by contamination matters that have not already been considered and, where necessary controlled, at the Outline application stage. We therefore have no further comments to make with regards to groundwater protection or land affected by contamination.

If you have any questions, please do not hesitate to contact me.

Many thanks,

Connor Bowman

Planning Specialist –Kent and South London Sustainable Places

Environment Agency | Orchard House, Endeavour Park, Addington, West Malling, Kent, ME19 5SH

[redacted]

[redacted]

Does Your Proposal Have Environmental Issues or Opportunities? Speak To Us Early!

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ECOLOGICAL ADVICE SERVICE

TO: ***Harry Bailey***

FROM: ***Helen Forster***

DATE: ***14 November 2025***

SUBJECT: ***Eastern Quarry, Swanscombe EDC/25/0183***

The following is provided by Kent County Council's Ecological Advice Service (KCC EAS) for Local Planning Authorities. It is independent, professional advice and is not a comment/position on the application from the county council. It is intended to advise the relevant planning officer(s) on the potential ecological impacts of the planning application and if sufficient/appropriate ecological information has been provided.

Any additional information, queries or comments on this advice that the applicant or other interested parties may have must be directed in every instance to the planning officer, who will seek input from the EAS where appropriate and necessary.

We have compare the proposed layout with the masterplan submitted as part of application EDC/17/0048 and we are satisfied that the proposal will not result in the loss of any open space/ecology areas agreed as part of the original application.

The information within the Landscape Design Statement and the South Western Buffer Landscape plan has confirmed that entirely native species will be used within the South Western Buffer. A mix of native and non native will be used within the Neighbourhood Green Landscape.

An ecology statement has been submitted within the Landscape Design Statement and it details that the site has potential to support reptiles, dormouse (and other small mammals) and breeding birds. It details that a dormouse survey has been on going since April however no results of the dormouse survey have been submitted.

Prior to the determination of this application we advise that the results of the dormouse surveys are provided so it is understood if a dormouse licence is required to implement the works. We note that the ecology statement was written in September so the results of the dormouse surveys (to date) could have been included.

We advise that we are satisfied that a precautionary approach to avoid impacts to reptiles, breeding birds and small mammals (not dormouse) is appropriate.

If you have any queries regarding our comments, please do not hesitate to get in touch.

Helen Forster MCIEEM
Biodiversity Officer

This response was submitted following consideration of the following documents:

- Landscape Design Statement; Define; September 2025
- South Western Buffer Landscape; Define; No Date
- Neighbourhood Green Landscape; Define; No date
- Ecology Statement; Middlemarch; 17th September 2025

Highways and Transportation
Kroner House
Eurogate Business Park
Ashford
TN24 8XU
Tel: 03000 418181
Date: 30 October 2025
Our Ref: SS

Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet
Kent
DA10 1EE

Application -	**EDC/25/0183**
Location -	**Ashmere Neighbourhood Green Ashmere, Eastern Quarry, Watling Street Swanscombe, Kent**
Proposal -	**Reserved matters application (relating to access, appearance, landscaping, layout and scale) pursuant to Condition 2 (details of Reserved Matters), Condition 25 (Reserved Matters Design Details), Condition 28 (Noise Report), and Condition 31 (Open Land) of outline planning permission reference EDC/17/0048 for the creation of a Neighbourhood Green (Ashmere Neighbourhood Green South West)**

Thank you for your consultation in relation to the above planning application. I have the following comments to make with respect to highway matters:

It is noted that the planning cover letter, dated 7th October 2025, contains many typographical and sentencing errors, making it difficult to follow. It is recommended that the applicant reviews and updates this document as needed for clarity.

It is assumed that none of the site is to be offered to KCC for adoption. Should this assumption be incorrect it is requested that KCC be re-consulted and the applicant provides additional information regarding the areas to be put forward for adoption.

I refer to the above planning application and having considered the development proposals and the effect on the highway network, raise no objection on behalf of the local highway authority.

It is important to note that Local Planning Authority (LPA) permission does not convey any approval to carry out works on or affecting the public highway.

Any changes to or affecting the public highway in Kent require the formal agreement of the Highway Authority, Kent County Council (KCC), and it should not be assumed that this will be a given because LPA planning permission has been granted.

For this reason, anyone considering works which may affect the public highway, including any highway-owned street furniture or landscape assets such as grass, shrubs and trees, is advised to engage with KCC Highways and Transportation at an early stage in the design process.

Across the county there are pieces of land next to private homes and gardens and near the highway that do not look like roads or pavements but are actually part of the public highway.

Some of this highway land is owned by Kent County Council whilst some is owned by third party owners. Irrespective of the ownership, this land may have 'highway rights' over the topsoil.

Works on private land may also affect the public highway. These include works to cellars, to retaining walls which support the highway or land above the highway, and to balconies, signs or other structures which project over the highway. Such works also require the approval of the Highway Authority.

Kent County Council has now introduced a pre-application advice service in addition to a full formal technical approval process for new or altered highway assets, with the aim of improving future maintainability. Further details are available on our website below:

https://www.kent.gov.uk/roads-and-travel/highway-permits-and-licences/highways-permissions-and-technical-guidance.

This process applies to all development works affecting the public highway other than applications for vehicle crossings, which are covered by a separate approval process. Further details on this are available on our website below:

https://www.kent.gov.uk/roads-and-travel/highway-permits-and-licences/apply-for-a-dropped-kerb/dropped-kerb-contractor-information

Once planning approval for any development has been granted by the LPA, it is the responsibility of the applicant to ensure that before development commences, all necessary highway approvals and consents have been obtained, and that the limits of the highway boundary have been clearly established, since failure to do so may result in enforcement action being taken by the Highway Authority.

The applicant must also ensure that the details shown on the approved plans agree in every aspect with those approved under the relevant legislation and common law. It is therefore important for the applicant to contact KCC Highways and Transportation to progress this aspect of the works prior to commencement on site.

Further guidance for applicants, including information about how to clarify the highway boundary and links to application forms for vehicular crossings and other highway matters, may be found on Kent County Council's website:

https://www.kent.gov.uk/roads-and-travel/highway-permits-and-licences/highways-permissions-and-technical-guidance.

Alternatively, KCC Highways and Transportation may be contacted by telephone: 03000 418181.

Yours faithfully

Director of Highways & Transportation

*This is a statutory technical response on behalf of KCC as Highway Authority. If you wish to make representations in relation to highways matters associated with the planning application under consideration, please make these directly to the Planning Authority.

Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet
Kent
DA10 1EE

Flood and Water Management
Sessions House
County Hall
Maidstone, Kent
ME14 1XQ
Website: www.kent.gov.uk/flooding
Email: suds@kent.gov.uk
Tel: 03000 41 41 41
Our Ref: EBBS/2025/107493
Date: 7 November 2025

Application No: EDC/25/0183

Location: Ashmere Neighbourhood Green Ashmere Eastern Quarry Watling Street Swanscombe Kent

Proposal: Reserved matters application (relating to access, appearance, landscaping, layout and scale) pursuant to Condition 2 (details of Reserved Matters), Condition 25 (Reserved Matters Design Details), Condition 28 (Noise Report), and Condition 31 (Open Land) of outline planning permission reference EDC/17/0048 for the creation of a Neighbourhood Green (Ashmere Neighbourhood Green South West)

Thank you for your consultation on the above referenced planning application.

Kent County Council as Lead Local Flood Authority has reviewed the documentation submitted in support of the application and have the following comments to provide:

The LLFA understands that the Drainage Technical Note (Revision A) covers the entirety of Phase 4, rather than just the areas shown on the Location Plan (DE_229_P10_001–Areas ASNG2 and the Western Swale). Despite this, we acknowledge that sections of Phase 4 collect surface water and discharge it into the Western Swale.

On this basis, we have reviewed the note, particularly Section 3, which details the impermeable areas. Statement 3.12 indicates that the impermeable area percentages now proposed for Phase 4 are lower than those set out in the overarching Patrick Parsons (PP) design. From Tables 3.2 and 3.3, it appears that while the total impermeable area percentage is reduced, this is due to an increase in the overall catchment area, from 3.799 ha in the PP design to 4.21 ha currently. We would therefore seek to better understand the additional area included within the current “Phase 4” boundary compared to the earlier design.

Additionally, the Drainage Strategy Note prepared by Camland Consulting (TN19 Ashmere P10 N’Hood Green) states that the sewers and swales serving the phases were designed to prevent flooding during a 1 in 30-year event, with any flooding during a 1 in 100-year event (plus a 20% climate change allowance) to be contained within carriageways and directed towards lakes or swales. While this was the approved design in 2019, climate change allowances were revised in 2023. The updated allowances for the site are 45% for the 100-year event and 35% for the 30-year event.

As the overarching approval predates the revised allowances, we would seek advice from EDC Planning to confirm whether it is appropriate to request applying the updated climate change allowances in this instance. Our view is that any development yet to be constructed should aim to meet current standards to ensure resilience against climate change impacts. However, we understand this may not be feasible due to the prior approval and would appreciate confirmation.

Irrespective of whether the climate change allowance can be amended, we note that no supporting modelling has been provided to demonstrate whether above ground flooding is expected to occur. We request that this modelling be provided for clarity.

This response has been provided using the best knowledge and information submitted as part of the planning application at the time of responding and is reliant on the accuracy of that information.

Yours faithfully,
Daniel Hoare
Senior Flood Risk Officer
Flood and Water Management

Kent Police

Protecting and **serving** the people of Kent

Planning Officer
Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet
Kent
DA10 1EE

[redacted]

Date: 22nd October 2025
Ref: EDC/25/0183/AH.1/EDC-27

Location: Ashmere Neighbourhood Green Ashmere Eastern Quarry Watling Street Swanscombe Kent

Proposal: Reserved matters application (relating to access, appearance, landscaping, layout and scale) pursuant to Condition 2 (details of Reserved Matters), Condition 25 (Reserved Matters Design Details), Condition 28 (Noise Report), and Condition 31 (Open Land) of outline planning permission reference EDC/17/0048 for the creation of a Neighbourhood Green (Ashmere Neighbourhood Green South West)

We have reviewed this application in regard to Crime Prevention Through Environmental Design (CPTED) and in accordance with the National Planning Policy Framework (NPPF).

Applicants/agents should consult us as Designing out Crime Officers (DOCO's) to address CPTED and incorporate Secured By Design (SBD) as appropriate. We use details of the site, relevant crime levels/type and intelligence information to help design out the opportunity for Crime, Fear of Crime, Anti-Social Behaviour (ASB), Nuisance and Conflict.

There is a carbon cost for crime and new developments give an opportunity to address it. Using CPTED along with attaining an SBD award using SBD guidance, policies and academic research would be evidence of the applicants' efforts to design out the opportunity for crime.

We recommend the applicant follows SBD guidance to address designing out crime to show a clear audit trail for Designing Out Crime, Crime Prevention and Community Safety and to meet our Local Authority statutory duties under Section 17 of the Crime and Disorder Act 1998. The points below identify my recommendations for the layout and design of this scheme;

1. The proposed neighbourhood green space must be well lit and covered by optimal natural surveillance from neighbouring properties.
2. Public Footpaths should be at least 3 metres wide to allow people to pass without infringing personal space and to accommodate passing wheelchairs, cycles and mobility vehicles. Consideration should be given to the provision of informal association spaces for members of the community, particularly young people.
3. Any current or new trees should help protect and enhance security without reducing the opportunity for surveillance or the effectiveness of lighting. Tall slender trees with a crown of above 2m rather than low crowned species are more suitable than "round shaped" trees with a low crown. Any new trees should not be planted too close to street lighting. Any hedges should be no higher than 1m, so that they do not obscure vulnerable areas. In addition, we would recommend dense / prickly planting to ensure individuals stay on pedestrian routes, and no not create desire lines. or spaces where potential offenders can hide from view.

https://kpsp.sharepoint.com/teams/K-DesigningOutCrimeTeam/Shared Documents/General/1 CPDA Planning Applications/Ebbsfleet/(EDC-27) Ashmere Neighbourhood Green Ashmere Eastern Quarry/DOCO response.docx

4. Lighting - Please note, whilst we are not qualified lighting engineers, any lighting plan should be approved by a professional lighting engineer (e.g. a Member of the ILP), particularly where a lighting condition is imposed, to help avoid conflict and light pollution. Bollard lighting should be avoided, SBD Residential (Homes) Guide 2025 states: " 19.3 SBD does not advocate the use of bollard lighting to achieve lighting uniformity. Bollard lighting is purely for wayfinding and can be easily obscured or damaged. It should be avoided, as it can increase the fear of crime, because it does not project sufficient light at the right height to recognise facial features." External lighting to conform to min standard of BS5489-1:2020 in accordance with SBD and the British Parking Association (BPA) Park Mark Safer Parking Scheme specifications and standards.
5. Security fencing around the perimeter of the proposed foul pumping station located within the neighbourhood green to be a minimum height of 1.8m to aid security. In addition, we highly recommend that the foul pumping station can be securely locked to prevent trespass and criminal damage.
6. For any LAP or LEAP, we recommend fencing at a minimum height of 1.2m and vandal resistant play equipment. Consideration should be given to a single dedicated entry and exit point to enable adult control/supervision.
7. Vehicle mitigation may be required on pedestrian routes or open green spaces, to prevent mopeds or similar vehicles accessing the area and causing nuisance.
8. For further advice on how to enhance safety and prevent anti-social behaviour occurring within open green spaces, we recommend visiting the Safer Parks website via the following link Safer Parks for Women and Girls - Green Flag Award and reviewing their Safer Parks guidance 250908_safer-parks_pcpi_single.pdf

If approved, site security is required for the construction phase. There is a duty for the principle contractor "to take reasonable steps to prevent access by unauthorised persons to the construction site" under the Construction (Design and Management) Regulations 2007. The site security should incorporate plant, machinery, supplies, tools and other vehicles and be site specific to geography and site requirements.

We welcome a discussion with the applicant/agent about site specific designing out crime.
If the points above are not addressed, they can affect the development and local policing.

This information is provided by Kent Police DOCO's and refers to situational crime prevention. This advice focuses on CPTED and Community Safety with regard to this specific planning application.

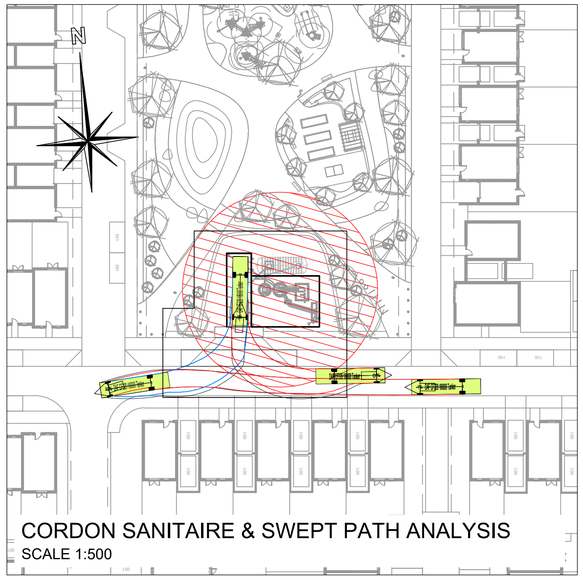
Yours sincerely,

DOCO.

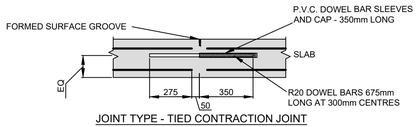
Designing Out Crime Officer

Strategic Prevention Command

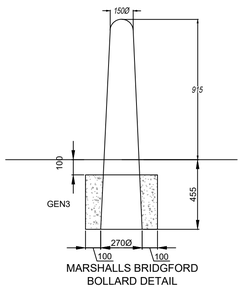
https://kpsp.sharepoint.com/teams/K-DesigningOutCrimeTeam/Shared Documents/General/1 CPDA Planning Applications/Ebbsfleet/(EDC-27) Ashmere Neighbourhood Green Ashmere Eastern Quarry/DOCO response.docx



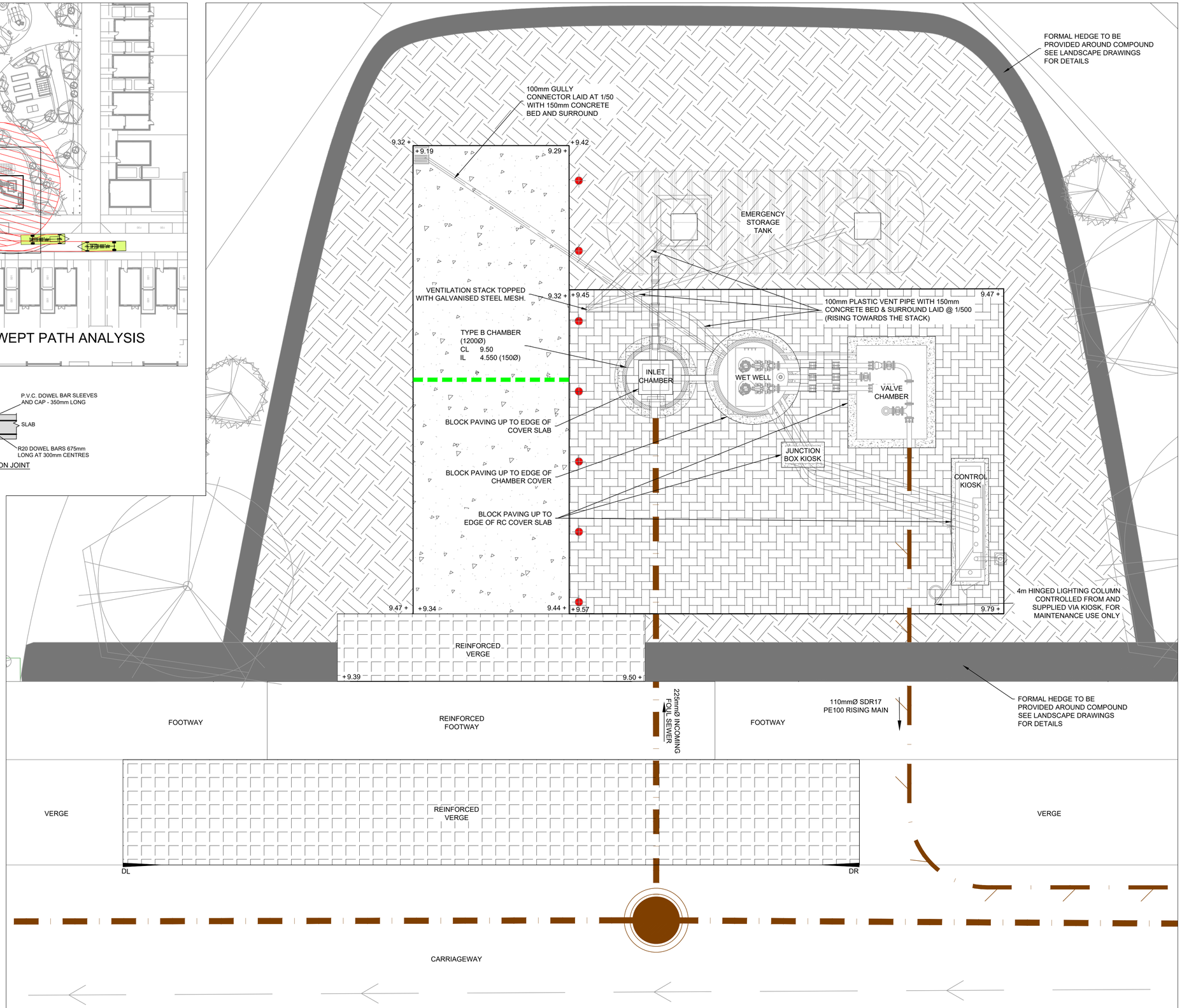
CORDON SANITAIRE & SWEPT PATH ANALYSIS
SCALE 1:500



JOINT TYPE - TIED CONTRACTION JOINT
SCALE 1:20



MARSHALLS BRIDGFORD BOLLARD DETAIL
1:20



PUMPING STATION COMPOUND
SCALE 1:50

GENERAL NOTES
1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF CAMLAND CONSULTING LTD.
1.2 DO NOT SCALE FROM THIS DRAWING.
1.3. LOCATIONS OF ALL EXISTING SERVICES ON-SITE TO BE CONFIRMED & PROVIDED TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORKS.
1.4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT CAMLAND CONSULTING LTD DRAWINGS & SPECIFICATIONS.

SWEPT PATH ANALYSIS NOTES
2.1 THE SWEPT PATH ANALYSIS HAS BEEN CARRIED OUT USING AUTODESK VEHICLE TRACKING 2025.

KEY

STRENGTHENED VERGE FOR MAINTENANCE ACCESS
CELLULAR CONCRETE BLOCKS INFILLED WITH SEEDED TOPSOIL
200mm TYPE 1 SUB BASE

BLOCK PAVING TO COMPOUND
80mm MARSHALLS KEYBLOCK PAVING PATTERN - HERRINGBONE,
COLOUR - NATURAL
30mm SAND
200mm TYPE 1 SUB BASE

RC SLAB
150mm THICK PAV2 RC SLAB WITH BRUSHED FINISH.
1 LAYER A393 FABRIC WITH 50mm COVER FROM TOP. ON 1200 GAUGE POLYTHENE SLIP MEMBRANE WITH 300mm LAP.
ON 150mm COMPACTED TYPE 1.

SEEDED TOPSOIL
150mm THICK

RC SLAB CONTRACTION JOINT
HB2 KERB WITH 125mm UPSTAND
EF EF PCC FLUSH EDGING
915mm MARSHALLS BRIDGFORD BOLLARD (SEE DETAIL RIGHT)
10.300 + PROPOSED GROUND LEVEL
DL DR PCC DROPPER KERB (LEFT / RIGHT HAND)

KEY PLAN
NOT TO SCALE

Rev.	Amendments	Date	By
P1	INITIAL ISSUE.	23.09.25	RDT

Revisions

CAMLAND CONSULTING
Land • Development • Construction

Camland Consulting Ltd.
The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Client
EASTERN QUARRY Ltd.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
INFRASTRUCTURE

Drawing
P10 NEIGHBOURHOOD GREEN PUMPING STATION COMPOUND AND CONRDON SANITAIRE

Scales 1:250 At original size A1

Drawn RDT Checked DCT
Date 23.09.25

Status PRELIMINARY

Drawing No. B18075/368 Rev. P1

C:\Users\RichardTart\Camland Consultancy\Camland Design - Documents\B18075 - Ebbsfleet EQ infrastructure\Design\Acad\368 P10 NEIGHBOURHOOD GREEN FOUL PUMPING STATION COMPOUND AND CORDON SANITAIRE.dwg, A1, 23/09/2025 18:08:02, RichardTart, AutoCAD PDF (Smallest File just ISO A sizes) A1L 260723.pc3

EBBSFLEET PARCEL 10 FOUL WATER PUMP STATION NOISE & ODOUR REPORT

Design & Construction Guidance V2

Produced By Moduquip Ltd

Issue	Date	Reason	Issued	Approved	Revisions Show In
A	23/09/2025	For approval	T.G.	G.G.	n/a

Table of Contents

Overview 3
What is a pumping station? 3
Why is there a potential for odour and noise? 3
Odour mitigation policies 3
Noise mitigation policies 4

Overview

The purpose of this report is to establish the likelihood of a wastewater pumping station causing noise or odour issues to residents living nearby. Whilst we have taken every step to ensure the accuracy of this report, we do not take any liabilities where misunderstanding or errors may occur.

What is a pumping station?

A pumping station is used where it is required to add energy to a medium to either add pressure, increase the flow of the medium or lift it to a greater height. In this case a pumping station is required to lift the wastewater to a greater height into a sewer as this cannot be achieved by gravity flow.

Why is there a potential for odour and noise?

The main reason for a potential risk of odour is due to the fact that there will be wastewater sitting still for a period of time. The main reason for the potential risk of noise is that there are mechanical elements that will work in tandem in order to add the energy to the medium that could cause noise.

Odour mitigation policies

The main risk of odour from a pumping station is from two main sources, the first being a lot of fats being introduced into the system and the second is from septic sewage.

As the site is a residential site and does not have any restaurant draining into the system then we do not expect that the quantity of fats to be significant apart from some potential seasonal variations. During the Christmas period and other times, we would advise our client to ensure that the residents are kept aware of the need to pour fats, oils and greases into the bin rather than down the sink not only to limit the risk of blocking household drainage but to avoid the potential of fat bergs on the development and the odour potential from this.

The issue of septic sewage is mainly caused by sewage sitting idle for a long period of time where it starts to break down and emit toxic and smelly gases. Within the Design and Construction Guidance this is limited to 6 hours. Within the design if this is not the case, we will suggest mitigation measures such as a dosing system. In a lot of cases this is not the case as sewage is kept on the move.

Noise mitigation policies

There are a number of reasons why pumping stations can be heard and I will endeavour to outline these as follows;

Inflow 'Splash'
When an inflow enters the pumping station it is possible for it to land directly onto existing waste in the pumping station giving a 'splashing' sound.

Within the pumping station design we will ensure that there is a baffle plate on the inflow therefore ensuring that incoming flows will be directed at the concrete benching and therefore discharge energy at that point prior to touching the existing waste in the station.

Non-Return Valve Slamming
After a pump cycle, it is possible for the non-return valves to slam which at times can be audible from outside the pumping station.

To counter this, resilient-seated swing check valves are often incorporated in the design to ensure there is a rubber seating and not a metal-to-metal seal. As the rising main is small bored and short the deceleration on the NRV's will be very minimal.

Control Panel Components
Rarely will electric-mechanical items in the control panel such as Relays and Contactors cause noise disturbance.

With the pumping control panel designed to be installed inside a GRP kiosk, this will absorb the noises from the panel itself.

Submersible Pump
Submersible pumps can cause noise during a pump cycle. This noise can either come from the pump itself or through a rattling of the guiderails.

As the pump is one of the smallest pumps in the range and is submersed during the pump cycle, we do not envisage any noise to be audible from above ground level.

To ensure there is no noise from movement with the guiderails, the pump station design includes rubber seated top guiderail brackets to avoid a metal-to-metal contact.

EBBSFLEET PARCEL 10 FOUL WATER PUMP STATION NOISE & ODOUR STUDY

Design & Construction Guidance V2

Produced By Moduquip Ltd

Issue	Date	Reason	Issued	Approved	Revisions Show In
A	14/11/2025	For approval	T.G.	G.G.	n/a

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Overview 3
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Noise impact and mitigation policies 3
Summary 5

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Noise impact and mitigation policies

There are a number of reasons why pumping stations can be heard and I will endeavour to outline these as follows;

<u>Inflow ‘Rush’</u>

A full 150 mm pipe conveying water at typical velocities can generate internal noise levels in the region of 70–90 dB due to turbulent flow. However, because the pipe is located several metres below ground, the surrounding soil mass provides substantial acoustic attenuation. As this energy propagates upward, a large proportion of the higher-frequency sound is absorbed, leaving only a much-reduced level, typically around 30–50 dB, detectable at ground level directly above the pumping station. This reduced level is generally comparable to background noise in most outdoor environments and would not normally be perceptible without specialised detection equipment. In addition to the pipe flow noise itself, a baffle plate will be installed on the incoming line to further dissipate hydraulic energy by directing the flow against the concrete benching rather than allowing it to fall freely. Baffle plates are commonly used in pumping stations and similar structures to reduce turbulence, limit splashing, and create a controlled flow path, all of which contribute to lower internal noise generation.

Inflow 'Splash'

Where the inflow discharges directly into the pumping station, localised noise can also arise from water striking the surface of the water within the wet well, producing splashing or turbulent impacts. These sounds are largely contained within the enclosed chamber and, once transmitted through the cover slab and surrounding soil, they undergo the same strong attenuation effects noted previously, resulting in very low external noise levels. The incorporation of the baffle plate will significantly reduce such splashing by ensuring that incoming flows are guided smoothly onto the benching, where their kinetic energy is dissipated before they reach the water surface. The controlled entry of the sewage reduces both turbulence and impact noise within the chamber, further diminishing the potential for any sound to propagate beyond the structure. As a result, any noise produced by the inflow, whether from pipe turbulence or internal splashing, is not expected to contribute any noticeable increase above ambient noise levels outside the pumping station, typically around 30-50 db(A).

Non Return Valve Slamming

A metal-faced non-return valve located approximately 1.2 m below ground can generate short, impulsive noises which are typically in the range of 70–90 dB(A) at the point of impact. However, the chamber structure, surrounding soil, and the heavy galvanised steel cover provide substantial attenuation, even though the cover is not fully watertight. These layers significantly reduce the transmission of high-frequency impact noise, meaning that any sound reaching the surface is typically reduced to around 30–50 dB(A), which falls within the normal range of outdoor ambient noise. As a result, only a faint and occasional "clunk" may be perceptible directly above the cover in very quiet conditions, and in most circumstances the non-return valve operation is not expected to produce any noticeable increase above background noise levels.

Control Panel Components

Clicking from internal control panel components, such as relays and contactors, typically occurs intermittently throughout the day as equipment switches on and off, producing short mechanical sounds. These noises are generally in the region of 40–60 dB(A) at source; however, in this installation the components are housed within a Form 4 segregated control panel, which is itself enclosed inside a glass-reinforced plastic (GRP) kiosk. Both the panel and the kiosk provide effective acoustic damping, particularly of the higher-frequency switching noises, resulting in typical attenuation of 20–30 dB(A) or more. Accordingly, any sound that does reach the exterior of the kiosk is expected to fall below 30–40 dB(A), comparable to quiet ambient outdoor conditions and easily masked by normal background noise. As such, the routine daytime clicking of control panel components is not expected to be audible outside the kiosk and will not contribute any noticeable increase above existing environmental noise levels.

Submersible Pumps

Submersible pumps located several metres below ground typically produce a low-frequency hum and some vibration during operation, with source noise levels often in the range of 70 to 85 dB(A) at the pump itself. In this case the pumps are fully submerged within the wet well and surrounded by a significant mass of water, concrete chamber walls, a cover slab, and several metres of soil. These layers absorb and dampen most of the noise before it can reach the surface, especially the higher-frequency elements. As a result, the noise level at ground level is usually reduced to around 30 to 50 dB(A), which sits within the normal range of outdoor background sound and is generally masked by typical environmental noise. Therefore, the operation of the submersible pumps is not expected to be noticeable outside the pumping station and will not produce any meaningful increase above existing ambient noise levels.

Guide Rail Rattling

The 2-inch steel pump guide rails are held securely at the base using a cast iron duck-foot supplied by the pump manufacturer, with the upper end restrained by a stainless steel upper guide rail bracket, typically secured to the guide rail using a rubber mount. This arrangement is designed to minimise movement during pump start-up and shutdown, although a small amount of vibration or momentary rattling can occur as the pump engages with or disengages from the guide system. Any such noise is further dampened by the surrounding water, the mass of the chamber structure, the cover slab, and the overlying soil. These layers significantly reduce both airborne and structure-borne sound before it reaches the surface. As a result, any rattling from the guide rails is expected to be reduced to a level that falls within typical background noise at ground level and should not be noticeable to nearby receptors.

Summary

In summary, the proposed pumping station presents a very low likelihood of generating odour or noise that would impact nearby receptors. Odour risk is minimal due to the residential nature of the development, where fat levels in the wastewater are expected to remain low and predictable. Sewage will move frequently through the system, reducing the potential for septic conditions, and simple mitigation measures as described will be employed to maintain effective control.

Noise impacts have been carefully assessed, and all potential sources are significantly attenuated by the surrounding water, chamber structure, cover slab, and depth of soil above the installation. Inflow noise, valve operation, control panel activity, submersible pumps and any movement of guide rails all reduce to levels comparable with typical outdoor background sound by the time they reach ground level. It is also relevant that the pumping station will operate least during night-time hours, with most activity occurring during the day when any residual noise or odour is at its least perceptible and least likely to cause disturbance.

Henrietta House | Henrietta Place | London | W1G 0NB

Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Ebbsfleet
Kent
DA11 8BD

Submitted via Planning Portal Reference: ***PP-14396418***

07 October 2025

Dear Sir/ Madam,

ASHMERE NEIGHBOURHOOD GREEN & SOUTH WEST BOUNDARY, EASTERN QUARRY (WHITECLIFFE), WATLING STREET, SWANSCOMBE, KENT

PLANNING APPLICATION FOR RESERVED MATTERS PURSUANT TO CONDITIONS 2 AND 25 OF PLANNING PERMISSION REF EDC/17/0048 DATED 28 MARCH 2018

On behalf of Eastern Quarry Ltd (hereafter identified as the applicant), please find enclosed an application for Reserved Matters (RM) approval pursuant to planning permission ref EDC/17/0048 dated 28 March 2018, with details of means of access, appearance, landscaping, layout and scale, in respect of the Ashmere Neighbourhood Green (NG) and South West Boundary (SWB). This application is submitted for the following:

> *"Reserved matters application (details of access, appearance, landscaping, layout and scale) relating to the installation of a Neighbourhood Green, pumping station and landscaping works pursuant to Conditions 2 and 25 of planning permission EDC/17/0048."*

The following table sets out the drawings and documents submitted alongside this application. The information submitted is considered to fully satisfy the requirements set out by condition 25 of Outline Planning Permission (OPP) ref. EDC/17/0048.

Table 1: Submitted Documents and Plans

Document/ Plan	Prepared by
Application Form and Ownership Certificates	CBRE
Covering Letter/ Statement	CBRE
Site Location Plan (DE_229_ASHSWNG_RM_010)	Define
Landscape - DE_229_ASHSWNG_RM_001-General Arrangement Plan - DE_229_ASHSWNG_RM_002-Detailed Landscape Plan 01 - DE_229_ASHSWNG_RM_003-Detailed Landscape Plan 02	Define

- DE_229_ASHSWNG_RM_004-Detailed Landscape Plan 03
- DE_229_ASHSWNG-RM_011 Landscape Sections

Flooding/ Technical Drainage Supporting Information - Ashmere P10 NG – Storm Network (DEDA Infrastructure) - B18075 - TN19 - Ashmere P10 NG - Drainage Statement - Eastern Quarry Phase 4 – Drainage Technical Note - 153 Drainage Strategy Plan 3 of 4 Preliminary A1 - 369 P1 Ashmere Parcel 10 Neighbourhood Green Drainage Strategy A1	Camland
Noise/ Odour - 717229 - Noise & Odour Report - Neighbourhood Green Foul Pumping Station Compound and Cordon Sanitaire A1	Camland

The planning application fee of £588 (inc VAT) (plus £85 service charge) will be paid electronically via the Planning Portal by our client. The application fee has been calculated in accordance with The Town and Country Planning (Fees for Applications, Deemed Applications, Requests and Site Visits) (England) Regulations 2023 (as amended).

Site Context

The Site is located within the village of Ashmere, Eastern Quarry. Within Ashmere, this proposal sits within Parcel 10. The Site boundary spans two areas, the Ashmere NG and the SWB. Fastrack abuts the northern boundary of the SWB area, an existing chalk cliff runs parallel to the western boundary and wraps around the southern boundary where the lake edge will be positioned.

Residential development at Parcel 10 will encompass the NG, and border the SWB. This residential development is currently live under planning application ref. EDC/25/0165 on the EDC public register.

Planning Context

The outline permission under EDC/17/0048 approved the following drawings to which Reserved Matters submitted must substantially accord with (Condition 3):

- Plan 1B: Site location Plan
- Plan 2B: Movement and Infrastructure Corridor
- Plan 3B: Building heights Plan
- Plan 4B: Green Zones Plan
- Plan 5B: Ecological and Natural Reserve Areas
- Plan 6B: Finished Ground Levels
- Plan 7B: Major Urban Park Plan
- Plan 8B: Linkages Plan
- Land Use Disposition Plan
- Development Parameters Schedule including Disposition of Development Table

The outline permission also approved a number of strategies to be accorded with (condition 4). These are:

- The Community Participation Strategy
- The Phasing Plan
- The Public Art Strategy

- The Site Wide Design and Access Strategy
- The Transport Strategy

In addition to the above, the Area Master Plan and Design Code (approved under Condition 19 and 20 of the OPP) set detailed guidance on how development should come forward.

Pre-application Engagement & Consultation

EDC held a community engagement event at the Ashmere South Western Boundary landscaped area on 9 July 2025 to understand community views on the Ashmere NG proposals and the continuation of the western landscaped boundary south. Residents expressed a desire for play equipment, an area for ball games, sheltered areas, table tennis, benches, and biodiversity. In addition, residents stated that additional gym equipment would be underused and a 'waste of money'.

Feedback received during community engagement has indicated broad support for the proposed Neighbourhood Green (NG) within Ashmere. At present, the only significant area of publicly accessible green space available to residents is located along the western edge of the Vistry Phase 2 development. Consequently, the introduction of a new space incorporating both formal play facilities and informal recreational areas for younger children has been positively received.

During consultation, a number of residents expressed interest in receiving further information regarding the anticipated delivery timeline for the Neighbourhood Green within Phase 2. Given the current limited provision of open space within Ashmere, the community's desire for additional recreational amenities, including formal play areas and informal kickabout spaces, is both understandable and justified.

The forthcoming delivery of the Neighbourhood Greens—comprising the current proposal and the previously approved NG within Phase 2, both scheduled for completion in 2026—will address many of the community's aspirations. In addition, the introduction of Fastrack services in September 2025 will enhance connectivity to wider amenities within Alkerden and Ashmere. Over the longer term, residents will also benefit from access to the Major Urban Park (MUP), which is anticipated to commence construction in 2026, further contributing to the overall green infrastructure and recreational offer within the wider Eastern Quarry development.

With reference to the feedback received and lessons learned elsewhere within Ashmere, the Applicant has sought to reduced the total provision of gym equipment in this location and create a picnic area instead, with a table tennis table and cradle swing. In addition, the play provision will be revised to include Monkey bars and a balancing beam.

The Proposals

For the Ashmere NG and SWB, the Design Code requires the proposals to be *'located close to landscape buffer on the edge of the Ashmere village as well as the southern lake'.*

The proposals have been developed alongside Vistry's consultant team, who are currently seeking planning approval for residential development for Parcel 10 – a live planning application pending on Ebbsfleet Development Corporations (EDC) public register (application ref. EDC/25/0165). By working closely together, the proposals will deliver a comprehensive neighbourhood with well thought out connections focussing on views and the surrounding landscape.

The proposals are summarised below, however for a full account, please refer to the submitted pack of information. Please note that this RM application does not include details of the Lake Frontage – this will come forward under a separate RM application at a later date.

Neighbourhood Green

The proposed NG has been designed to reflect the site's former quarry landscape through a naturalistic and informal character, incorporating chalk as a key material to reinforce local distinctiveness. The scheme includes a centrally located wildlife-themed play area catering to a range of age groups, a curvilinear dry river feature formed from site-won crushed chalk serving as both a visual and ecological asset, and a community garden equipped with infrastructure to support resident-led planting and social activities. The layout integrates a network of footpaths to enhance connectivity, while small grassed mounds, native planting along the park's edges, and framed views towards the adjacent chalk cliffs contribute to biodiversity, visual interest, and a strong sense of place.

The pumping station within the NG forms part of the site wide strategic drainage strategy and is needed to limit the depth of sewers that would otherwise be necessary to drain the properties served by gravity drainage. Construction

(Design and Management) regulations require designers to consider the safety of construction and maintenance personnel during the life of the project while designing the scheme. Excessively deep sewers should therefore be avoided. If the pumping station were not provided, it would require sewers in excess of 7m depth.

Locating the pumping station within the Neighbourhood Green enables a 15m cordon sanitaire to be provided to any adjacent habitable properties, while remaining accessible for maintenance purposes. Infrequent maintenance access will be possible from the south of the pumping station and will be facilitated with a grasscrete type material that will allow wildflowers and grass to grow through. Modern pump stations are designed to be both quiet and odour-free during normal operation, with pumps housed in soundproofed structures and sophisticated odour control systems in place to contain smells from wastewater.

South West Boundary

The Ashmere SWB seeks to provide a continuation of the north western boundary that runs parallel to Ashmere Phase 2. Please refer to the submitted Define pack for details on the design and landscaping provision in this area.

Compliance with Condition 19 (Area Masterplan) and Condition 20 (Design Code)

Both Condition 19 and 20 require the details submitted under Condition 2 to generally accord with the Area Design Code according to the relevant area. Table 1 below sets out what the key principles are from the approved Design Code along with where this can be found within the documents and drawings submitted alongside this application.

Table 2 below sets out the coping principles for the Ashmere NG (South West). Table 3 addresses the principles for the SWB. An assessment is provided to confirm the schemes compliance and where further details can be accessed within the submission.

Ashmere NG Design Principle	**Assessment**
1. *Mini lawns on gentle earth mounds provide intimate areas surrounded by nature*	Earth modelling will be undertaken to provide small grass hills that resemble mini lawns on gentle mounds.
2. *The Scrapes. Small depressions in the ground where wetter soil will provide opportunities to explore different native seed mixes or different growing mediums. To reflect the species found in reclaimed chalk quarry.*	The proposed planting strategy states that a variety of species will be selected to ensure a resilient palette in terms of biodiversity, ecological diversity and drought. With reference to the chalk quarry, the species selected will include chalk loving windflowers from the UK. Wild seeds like this will be sown directly onto the chalk and where the conditions are right, they will germinate. This is to simulate the conditions of the site that had piles of chalk debris after the quarrying had finished. Please refer to the Landscape Strategy for details on the Dry River Seeding Mix.
3. *Timber boardwalks provide a variety of surfacing material and opportunity to step above ecology planting with "eco jetties" and seating.*	A timber boardwalk has been provided across the dry chalk river that provides a natural border around the parks edge. The
4. *Central play area with natural play elements including play boulders, play logs and timber play equipment. Areas of planting should be incorporated into the play such as willow walks.*	The Ashmere NG provides a central play area with a wildlife theme. In addition, larger climbing frames are provided at the request of the Ashmere community.
5. *Native tree and shrub planting providing a naturalistic appearance*	Tree planting in the park will consist of native UK species that help harmonise with the parks naturalistic character and proximity to the edges of the Ashmere village. Please refer to the Landscape Strategy statement for details of the tree and shrub panting.

6. *Information panels explaining botanical features such as chalk soil planting and wildflower*	This has been included, please refer to the submitted Ashmere NG Landscaping Plans for details on the exact location.
7. *Community garden area to provide an area for self-grow planters, organised clubs, BBQs, etc.*	The proposals include an area earmarked for a Community Garden. This will be managed by locals so that they take an ownership for this part of the park. To support organised clubs and local groups meeting here, the design includes a subtly hedge boundary to inform users that this part of the park has a different use that is more enclosed. Overall, this area will promote sustainable living, provide education opportunities for groups, and encourage environmental stewardship for the residents of Ashmere.

Ashmere SWB Design Principle	**Assessment**
1. *3m wide footpath/cyclepath to be provided adjacent to the development. This will be formed largely of a self-compacting gravel route, varying to hard paved areas where it crosses key streets and spaces.*	The proposals seek to maintain the 3m wide leisure route that runs north to south along the northern Ashmere western boundary. This material comprises of self-binding gravel in a golden colour.
2. *Large swathes of native tree planting to create sanctuary for wildlife and enhance the ecological corridor*	A variety of UK Native shrubs and tree species planted within the swale. Where possible, some trees will be translocated from chalk spine area on Site by the Site's ecologist.
3. *A variety of different native meadow mixes sown in locations relating to the ground conditions will provide a multitude of varying habitats*	A range of native seed mixes will be planted along the edge of the boundary to create marginal habitats.
4. *Swale corridor to contain wetland meadow planting and occasional shrub planting. Where required dams will be used to create varying environments along the length of the corridor and the width and depth of the swale will vary depending on site wide drainage requirements.*	Wetland seeding is proposed edges and lower parts of the swale basins.
5. *Areas of occasional seating every 100m to provide quiet place to stop along the wider movement corridor*	This will be provided alongside footpath connects into wider developments.
6. *A level area to the base of cliff will provide maintenance access if required and separation between the swale and cliff*	The Applicants technical team can confirm that there is a sufficient area of land between the Swale and the Cliff to carry out necessary works, if required.
7. *Existing cliff face retained*	This chalk cliff will be retained.

Compliance with Condition 25

Condition 25 of the OPP sets out the requirements for the submission of a Reserved Matters (RM) application. In respect of the Ashmere NG and SWB, the below table provides a summary of compliance with condition 25.

Relevant Part of Condition	Where Located/ Applicability
A – Updated Area Plan	The general arrangement plan provided provides an updated plan of the wider Ashmere village at a scale of 1:1250.
B – Landscaping	This submission includes details on hard and soft landscaping. In addition to the plans, landscape sections are included to give an indication of level change and detail the associated landscaping chosen.
C – Materials	The materials and appearance of the proposed NG and SWB are covered by the Define plans as well as the submitted Design Statement. In addition to being compliant with the Ashmere Area Masterplan (AMP) and Design Code, the materiality chosen accords with neighbouring developments nearby, notably the emerging Parcel 10 development and the landscaped area that abuts the Western edge of Ashmere Phase 2.
D – Street Lighting and Furniture	The Landscape Design Statement provides an illustrative lighting strategy for the Site. Overall, Lighting within the South Western Boundary and Neighbourhood Green provides security and safety for pedestrians whilst leaving certain areas unlit due to ecological sensitivities. It is anticipated that this concept will be developed in further detail via condition by a lighting specialist but sets out the key concepts and hierarchy at this stage. Further to this, key movement routes throughout the park will also be lit for those recreating within or passing through the park at night.
E – Boundary Treatment	Please refer to the submitted landscaping plans for details on boundary treatments.
F – Surface Finishes and Hard landscaping	Please refer to the submitted landscaping plans for details on surface finishes and hard landscaping.
G – Open Space	The application does not comprise residential uses, therefore this part of Condition 25 is not applicable.
H – External Lighting (not street lighting)	Please refer to the assessment under Part D.
I – Public Art	Not applicable.
J – Details of Cycle Parking	No applicable.
K – Television Signals	Not applicable.
L - Details of Signage and Interpretation	Details of signage and wayfinding throughout NG and SWB will be addressed as part of a condition application.

It is important to note that the Ashmere NG and SWB, whilst progressed in isolation for the purposes of this RM application, accords with the proposals that surround it. As the final detail around this is still emerging, it is suggested that some elements are best reserved for condition – such as signage and street lighting.

An assessment of the proposals and their compliance with the OPP PPS and strategy documents is set out within the tables above. In addition, this covering letter provides an overview of technical considerations that will be assessed by EDC when determining this proposal.

Technical Considerations

Ecology

The landscape proposals have been prepared in accordance with the Biodiversity Action Plan (BAP) for Ashmere. An Ecological Statement has been prepared by Middlemarch in support of this RM application. The statement provides the following recommendations

- Bats - A bat roost assessment of the building on site should be conducted prior to works starting.
- Birds - If vegetation clearance is conducted during nesting bid season (March-August inclusive) then a nesting bid check should be completed immediately prior to works starting.
- Dormice – Dormouse monitoring should continue on a monthly basis to establish if dormice are using the scrub on-site. If dormice are found to be present, a license amendment to the site wide license would be required.
- Herpetofauna and other mammals – vegetation clearance should be conducted under an ecological watching brief. All trapping and translocation should be conducted on site prior to works starting.
- Landscape design - All landscaping and species enhancement measures taken from the Biodiversity Action Plan and listed above should be followed.

It is anticipated that these mitigation measures could be secured by an appropriate planning condition.

Drainage

The drainage proposals have been developed to comply with the approved Water Management Plan, and the associated site wide drainage strategy (see drawing no. B18075-153).

It is proposed to drain the Neighbourhood Green via filter drains, linear drains and pipes to the strategic surface water drainage system serving the parcel. The strategic network is comprised of sewers, swales, and lakes to convey surface water run off to a large attenuation lake, from where run off will be pumped to a new outfall into the river Thames at a rate controlled by a surface water pumping station. Strategic drainage of the parcel is described in more detail in the Ardent drainage technical note ref 173535-04.

Infiltration techniques are not suitable on the site due to the low permeability of the soil and the presence of an underlying principal aquifer.

Noise and Vibration

The Ashmere NG will also accommodate an interim foul water pumping station, which is needed to avoid excessively deep strategic foul water sewers, thereby complying with Construction Design and Management Regulations to consider the safety of construction and maintenance personnel in the life of the facility. The pumping station will be the subject of a 15m cordon sanitaire which will prevent habitable accommodation prevent development that would be adversely affected by smell. The pumps will be electric so noise will be kept to a minimum.

Infrequent maintenance access will be possible from the south of the pumping station and will be facilitated with a grass crete type material that will allow wildflowers and grass to grow through.

Modern pump stations are designed to be both quiet and odour-free during normal operation, with pumps housed in soundproofed structures and sophisticated odour control systems in place to contain smells from wastewater.

Summary

The proposals represent a high quality landscape provision that ties into the neighbouring context of Ashmere. The development has taken on board feedback from residents to ensure that the public open space offering responds to their needs, as well as the requirements of the AMP and DC.

We trust the enclosed information is satisfactory and look forward to confirmation that this application has been validated. In the meantime, should you have any queries, please do not hesitate to contact me [redacted] or my colleague Kelly Lippett [redacted]

Yours sincerely,

[redacted]

James Dodds
Senior Planner
CBRE Limited on behalf of Eastern Quarry Ltd

From: SouthernWater PlanningConsultations <SouthernWater.PlanningConsultations@southernwater.co.uk>
Sent: 24 October 2025 12:31
To: EDC Planning <edcplanning@ebbsfleetdc.org.uk>
Subject: RE: Planning Application Consultation for application EDC/25/0183 at Ashmere Neighbourhood Green - DSA000048489

Good afternoon,

Thank you for your email.

Unfortunately, Southern Water are unable to comment on this application due to the development site is not located within Southern Water's statutory area for water supply/wastewater services.

Please contact Thames Water who are the relevant statutory undertaker.

Yours
faithfully,

Kelly Donaldson

Future Growth Planning

Developer Services

T. 0330 303 0119

southernwater.co.uk

SCHEME	717229 - Ebbsfleet Quarry Parcel 10 Pumping Station
WATER AUTHORITY	Independent Water Networks Ltd
REPORT	SUGGESTED MAINTENANCE INTERVALS
PAGE NUMBER	PAGE 1 OF 1

Suggested Maintenence Intervals

Suggested Maintenance Intervals	
Component / Task	Suggested Frequency
Wet well visual inspection	Every 3 months
Pump run test (automatic and manual modes)	Every 3 months
Pump removal, clean and full mechanical check	Every 6 months
Non-return valve inspection and clean	Every 6 months
Gate valve operation and condition check	Every 6 months
Penstock vave and condition check	Every 6 months
Guide rails, lifting chains and brackets	Every 6 months
Control panel functional test	Every 6 months
Full wet well clean / de-sludge	Annually (or sooner if needed)
Ventilation system inspection (if fitted)	Annually
Emergency backup / generator test	Annually

This is for guidance purposes only and is subject to change.

E&OE

Ashmere

LANDSCAPE DESIGN STATEMENT FOR PARCEL 10 NEIGHBOURHOOD GREEN
WHITECLIFFE, EBBSFLEET

SEPTEMBER 2025

EBBSFLEET GARDEN CITY

WHITECLIFFE

©
DEFINE

camland
developments ltd

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INTRODUCTION

This Landscape Design Statement has been prepared on behalf of Eastern Quarry Ltd, who are developing the Whitecliffe site. It is submitted as a part of a reserved matters planning submission for the Neighbourhood Green in Parcel 10 and the South Western Boundary to the Site.

This statement should be read in conjunction with the detailed application plans for the these landscape areas.

- DE_229_ASHSWNG_RM_001-General Arrangement Plan
- DE_229_ASHSWNG_RM_002-Detailed Landscape Plan 01
- DE_229_ASHSWNG_RM_003-Detailed Landscape Plan 02
- DE_229_ASHSWNG_RM_004-Detailed Landscape Plan 03
- DE_229_ASHSWNG_RM_010-Site Location Plan
- DE_229_ASHSWNG-RM_011 Landscape Sections

These drawings are to be read in conjunction with BPTW's adjoining submission for the adjacent area of housing. Both designs have been coordinated together in a way that will provide a comprehensive neighbourhood with well thought out connections focusing on views and the surrounding landscape.

Context

This Landscape Design Statement provides an explanation of the design rationale that has been incorporated into the proposals along with images of the details of planting, hardscape, and street furniture.

Location Plan

LANDSCAPE DESIGN STATEMENT

ASHMERE AMP&DC

Design Vision

To set the scene, the Design Code requires the south western Neighbourhood Green to be "located close to the landscape buffer on the edge of the site as well as the southern lake".

The proximity to these spaces offers an opportunity to create a park with a naturalistic and undulating character, with dips and mounds that provide a range of ecological diversity.

The Western Boundary will contain swathes of native planting to provide the necessary requirements for site wide ecology, structure and wildlife (as identified in the BAP). It will also provide leisure routes, and form connections to the wider pedestrian and cycle network.

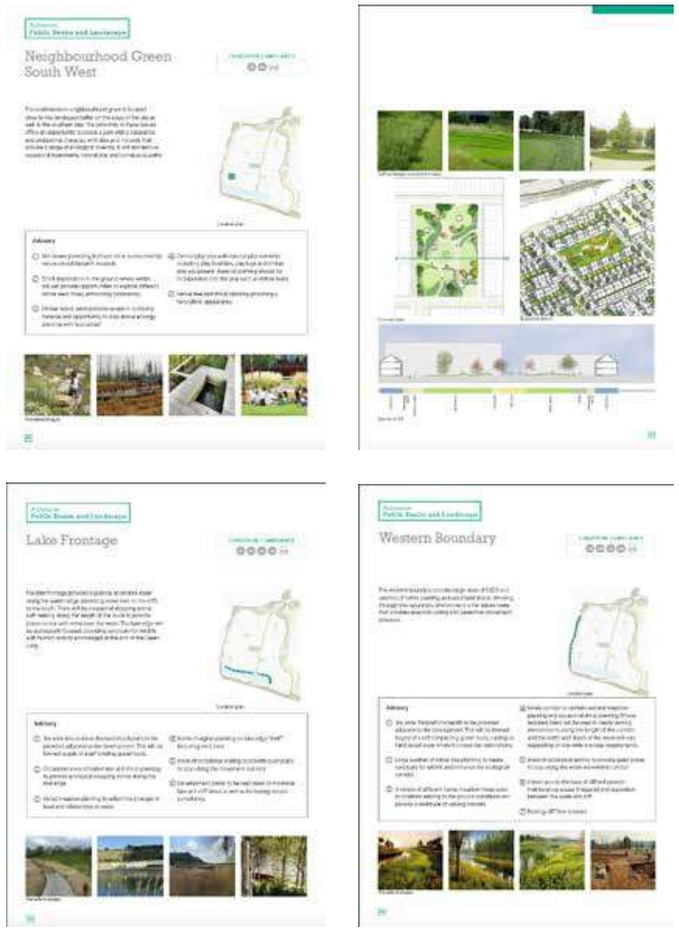
The principles set out in the DC can be summarised as follows:

Neighbourhood Green

- Mini Lawns surrounded by earth mounds;
- Small depressions in the ground providing opportunities to provide different seed mixes;
- Timber board walks provide opportunity to step over ecology;
- Central LEAP play area with natural play elements and willow walks;
- Use of native planting provides a naturalistic appearance.
- Key Visual Links [to the wider landscape];
- Community Social Space for "pop up events";
- Landscape art intervention relating to quarry heritage.

Western Boundary

- Outdoor Gym Equipment (See public Engagement feedback below) 3m wide leisure route (self binding gravel);
- Key Visual Link termination
- Groups of native planting to create wildlife stepping stones;
- Wildflower meadow responding to changes of level;
- Use of native marginal planting;
- Occasional areas of seating to provide place to rest and enjoy the space.



Pages from Ashmere Design Code

PUBLIC ENGAGEMENT

Public Engagement Event Summary Report

On the 9th July 2025 EDC hosted a public engagement event on the Western Edge of Ashmere in the existing parkland beside the cliffs. EDC kindly circulated their 'Event Summary Report' which contains some very useful feedback from local residents. Residents were asked what kind of activities they would like to see and this is how they responded:

Highest scoring play facilities Number of votes

Monkey bars & balancing beams	18	Equal gender split
Area for ball games	18	Equal gender split
Basket swings/ large group swings	17	Majority votes from girls
Sheltered areas	16	An opportunity for shade, picnic, seating
Skating facilities	16	Equal gender split
Climbing frame	16	Equal gender split
Table Tennis	15	Received highest votes from adults

Other play facilities which were suggested and proved popular amongst children and adults included zip lines, trampolining, adventure trails, a place for board games (e.g. floor noughts and crosses) and play equipment for toddlers.

More general suggestions for facilities which they hoped to see introduced within the neighbourhood green and other future parks in Ashmere included more benches, more biodiversity, picnic tables, more bins including dog bins, drinking fountains and better lighting specifically along the western edge.

What residents wanted to see:

- Requests for high quality playgrounds from both adults and children to include formal play equipment including slides and swings, which Ashmere doesn't currently include. This was preferred over boulders and climbing objects.
- There was also a request for a play area for toddlers and young children, suggestions mentioned include adventure trails, play on the way and informal climbing.
- An area to support ball games with some informal kick-about area, an area with a goal post was welcome.
- Scooting, biking and skating for children must be allowed in the park. Many children that attended the engagement even arrived on bicycles and expressed keen interest on having play which supported that.
- Space to sit in the shade and in the sun as well, particularly important in the winter,
- as well as seating spaces to face each other. We were engaging on one of the hottest days of the year, and there was no shade in the western edge, which was highlighted by residents as a key issue.
- Opportunities for play for older children and adults included table tennis and a place for board games.

What residents didn't want:

- The existing outdoor gym equipment is infrequently used by existing residents and there was little desire for additional equipment.
- There was mention of reducing the size of the pumping station.

Design Changes

In Summary there are several key actions as a result of this engagement and also some worthy observations from the design team.

Given Ashmere currently has little of the open space built that is planned for the future the residents are currently under provided for so it is no surprise that they would welcome more open space, more formal play, kickabout space etc. The only space they have at the moment is characterised by a few boulders and some gym equipment. Much of their wish list will be provided in the form of the upcoming neighbourhood greens (both this one and the approved Neighbourhood Green in Phase 02 which are due for completion in 2026). In addition to this, residents will have access via Fastrack in September 2025 to Alkerden and Ashmere, and over the coming years the Major Urban Park (that is due to start construction in 2026). The MUP will contain Skate facilities, kickabout spaces, more play and areas for riding bikes.

Notwithstanding all this, the request to have fewer gym areas is noted and this is contrary to principles set out in the AMP&DC. Therefore we propose to :

- Remove the proposed gym equipment from the upcoming planning submission and create a picnic area instead. As an initial suggestion, we propose to use the construction budget to get a table tennis table in the Neighbourhood Park and a Cradle Swing beside the cliffs instead.
- The design of the play area will take on board the public desire to include Monkey Bars and a balancing beam.

NEIGHBOURHOOD GREEN DESIGN

CONCEPT

Concept

The park has been design to be informal and take on a naturalistic character to reflect the surrounding landscape in this area. Chalk will be used as an accent in the park, which will enhance the sense of place, a park that sits within a former quarry.

The following principles will be applied to the design;

Play

Central Play Area with a wildlife theme, focusing on bugs and flowers. Providing a range of play experiences from imaginative play through to a larger climbing frame for older children to hang out on.

Movement

Footpaths and spaces are connecting to each corner of the Neighbourhood Green and also at mid points along the length. This will ensure that the park forms a key node in the wider movement around the site and helps people to orientate themselves in their surroundings.

Dry River

A curvaceous and winding loop that will create a natural border around the park's edges and reflect the site's chalk geology, in response to the Site requirement for a landscape art intervention. Made from site won crushed chalk this dry river will create an interesting focus that creates additional habitat and options for games and natural play.

Community Garden

A small social space will be provided with opportunities for local residents to plant their own part of the park, a water point an electrical supply along with notice board seating and a pergola.

Hills

Small grass hills are created in the landscape to provide an interesting form, improve views to the south and provide opportunities for play and relaxing.

Wild Edges

The edges to the park will create a naturalistic frame where native planting will be used to enhance biodiversity and create structure.

View to Cliffs

Views of the cliffs over the roof tops are possible from the park and these will be framed by leaving a corridor through the tree planting.

DESIGN

Legend

① Central Play Area with a wildlife theme, focusing on insects and flowers. Providing a range of play experiences from imaginative play through to a larger climbing frame for older children to hang out on, framed by semi ornamental planting mix

② Elements of natural play incorporated into the park. Consisting of play boulders and some play logs.

③ Earth modelling to create small grass hills

④ Community Social space with benches, pergola, community planters and table tennis table. Serviced with lockable water connection and electrical supply pillar box

⑤ Dry Chalk River. Crushed chalk weaving through the park adds interest, opportunities for informal play and habitat

⑥ Timber boardwalk material aligned with dry river creates interesting threshold detail.

⑦ Footpath connections aligned on key movement routes and defining spaces within the park

⑧ Naturalistic planting around edges to the park using predominantly wildflower seed with shrub and perennial planting.

⑨ Formal hedge defines the park edge and provides separation between the car parking and the space

⑩ Information panels explaining botanical features such as chalk soil planting and wildflower edges

⑪ Pumping station and associated vehicular access. Softened with planting, grasscrete parking and tree planting to help it assimilate into the landscape.

SCALE 1:500

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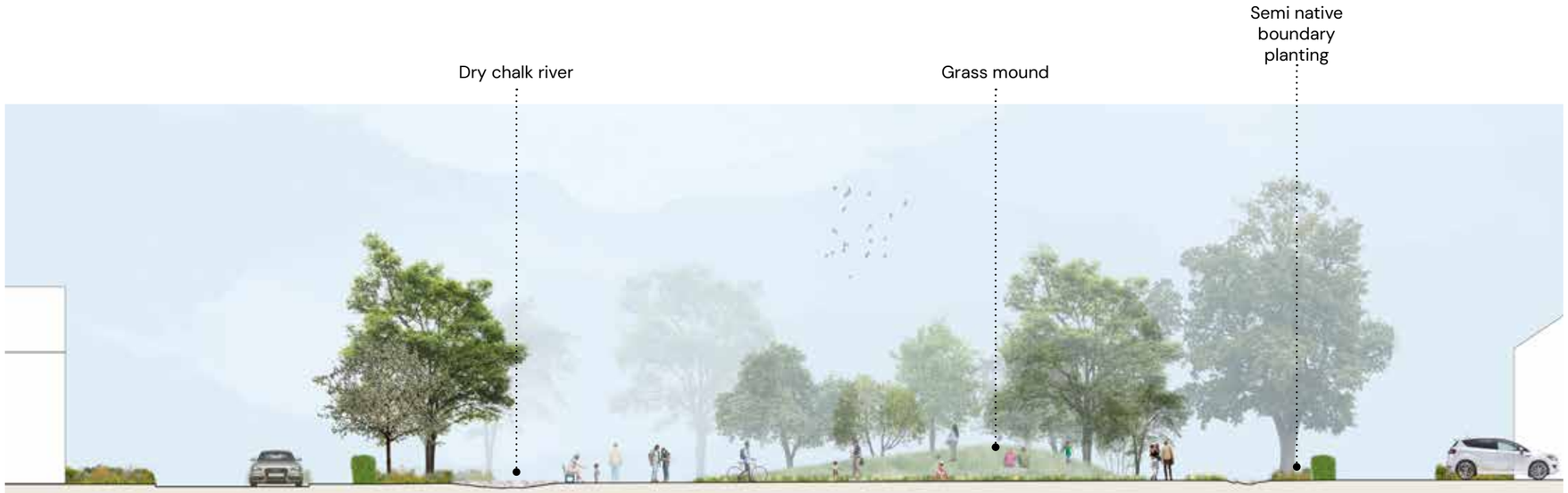
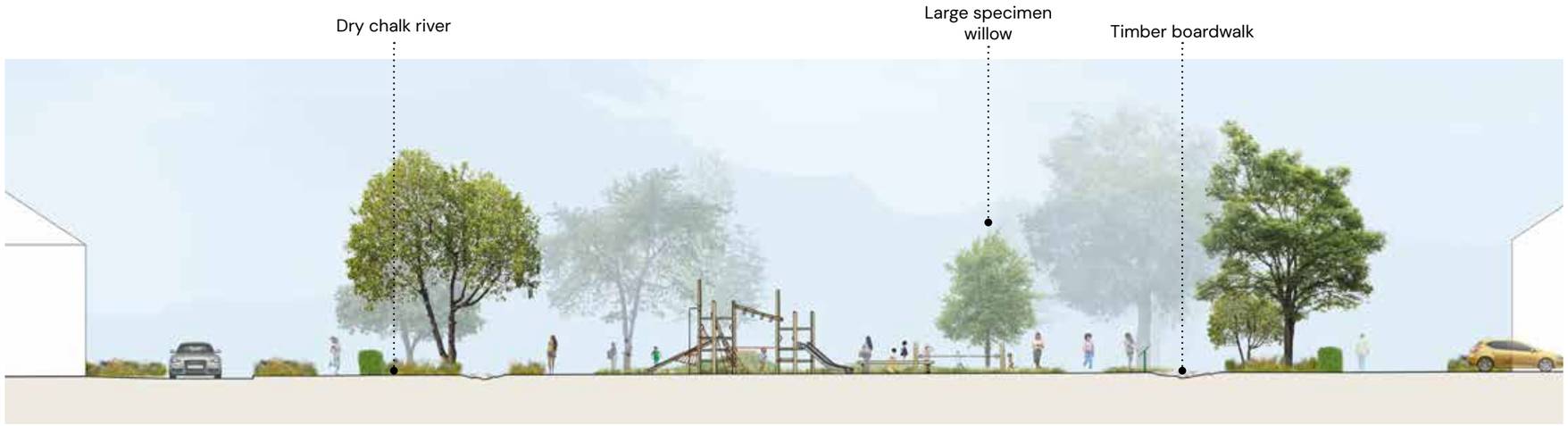
N

SECTIONS



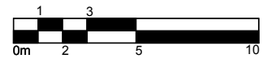
A-AA

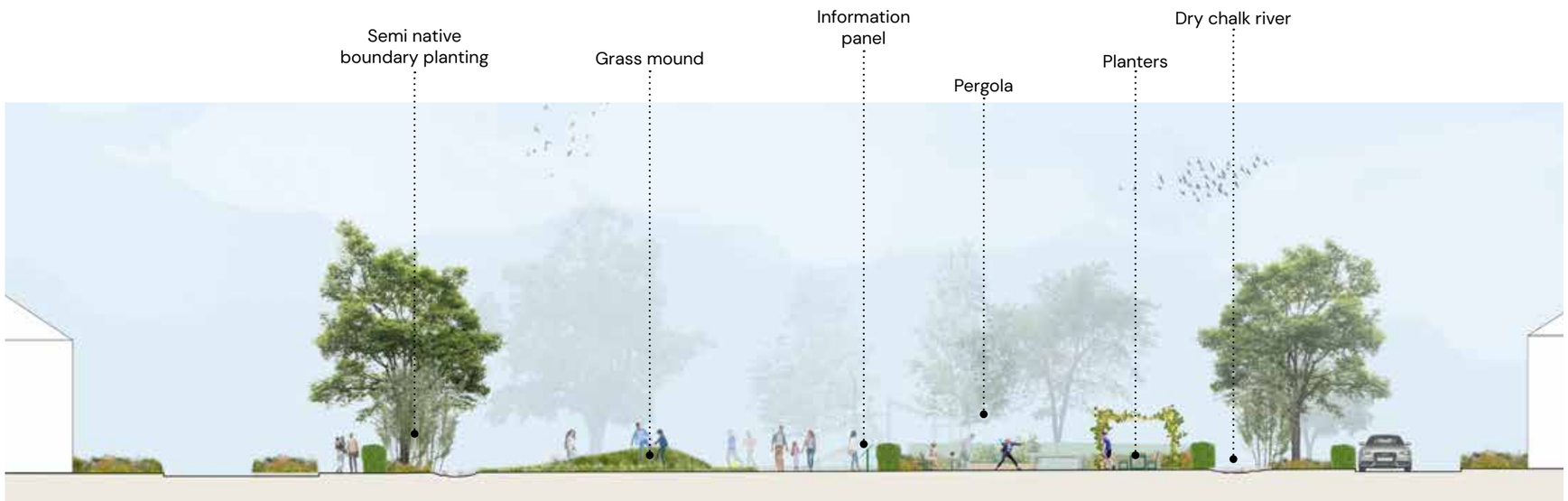


B-BB

Section Location Plan (Not to Scale)

SCALE 1:250





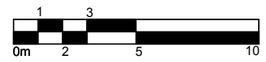
C-CC

Amenity lawn

Community garden

Section Location Plan (Not to Scale)

SCALE 1:250



COMMUNITY GARDEN

COMMUNITY GARDEN

Community Garden

The Community Garden will be managed by locals so that they take an ownership of this part of the park. The design creates a hedge boundary that subtly creates the message that this part of the park has a different use, a more enclosed and human scale where people can meet and socialise.

This area will promote sustainable living, provide educational opportunities and encourage environmental stewardship for residents of Ashmere.

Legend

① Raised timber planters provide areas to customise planting and are helpful to those who may be in wheelchairs or less mobile.

② Standard planting beds can be customised within the space akin to a standard garden flower bed.

③ Pergola provides shelter and shade and a place to meet

④ Formal clipped hedge creates enclosure and human scale to make it more inviting to sit within a larger space

⑤ Lockable water point so that the community can water their plants (and this can also be used by the site wide maintenance team)

⑥ Electrical supply in pillar box (Can be accessed by Community volunteers and maintenance team)

⑦ Compost area

⑧ Notice Board (on garden entrance)

⑨ Picnic Bench

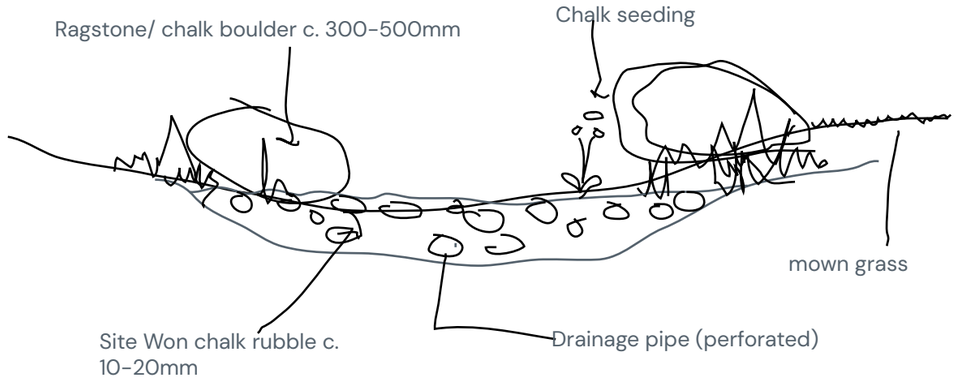
⑩ Two bug hotels set within planting bed

DRY RIVER

The Area Master Plan locates a “Landscape Intervention relating to Quarry Heritage” in this Neighbourhood Green. The Dry River is this intervention, and more. It is a design response that does several things:

- It provides a link to the past, to the chalk quarrying and the site’s interesting geology. A connection to the ever present cliffs that loom above the surrounding roof tops.
- It acts as a flowing frame between the Natural Edges of the park and the more active, recreational parts of the park. In doing so, it provides an interesting habitat for sparse native plants that will tolerate dry chalk conditions. Such as Yarrow, Field Scabious and Rest Harrow. The type of plants we found when we first arrived in the site, living on piles of chalk waste. These will be seeded in the gaps, some taking root when the right conditions align.
- It will also act as something fun. A trail for the adventurous. A connection to the past and an interesting change from the normal.
- The Dry River will contain a number of boulders (either chalk or imported Ragstone from a nearby quarry. Undulations will happen that allow the space to take on rainwater and drain into the wider network, effectively turning the whole thing into a rain garden/ SUDS feature.
- To the side, an interpretation panel will explain these things. Educating the community in the site and inviting them to look for emerging species or just to connect them to the history of the place they live.

DRY RIVER SCRAPBOOK



PUMPING STATION

Pumping Station

The pumping station forms part of the site wide strategic drainage strategy and is needed to limit the depth of sewers that would otherwise be necessary to drain the properties served by gravity drainage. Construction (Design and Management) regulations require designers to consider the safety of construction and maintenance personnel during the life of the project while designing the scheme. Excessively deep sewers should therefore be avoided. If the pumping station were not provided, it would require sewers in excess of 7m depth. Locating the pumping station within the Neighbourhood Green enables a 15m cordon sanitaire to be provided to any adjacent habitable properties, while remaining accessible for maintenance purposes.

Infrequent maintenance access will be possible from the south of the pumping station and will be facilitated with a grasscrete type material that will allow wildflowers and grass to grow through.

Modern pump stations are designed to be both quiet and odour-free during normal operation, with pumps housed in soundproofed structures and sophisticated odour control systems in place to contain smells from wastewater.

Legend

① Clipped hedge around the enclosure

② Planting used to create biodiversity benefits and help the pumping station assimilate into the landscape

③ Grasscrete used for vehicular maintenance access

④ Underground storage tank

⑤ Inspection chambers (flush with landscape)

D-DD

SCALE 1:250

1 3
0m 2 5 10

PLANTING STRATEGY

Planting Strategy

A variety of species has been selected to ensure a resilient palette in terms of biosecurity, ecological diversity and drought. Larger species will provide structure, creating opportunities for shade and shelter for birds.

Tree planting in the park will consist of native UK species that help harmonise with the parks naturalistic character and proximity to the edges of the site.

The Wild Edge is a low level mix of semi native planting that runs around the park edges, away from footfall and therefore able to form a soft backdrop to the park, with the hedge planting behind.

The amenity grass areas will contain a number of UK native flowering species that help to keep the lawn protected during drought, and also add interest in late spring with a carpet of daisies.

The play area planting is designed to be robust but also provide sensory experiences for people. This will be located in small pockets that help add structure where needed.

A key feature of the landscape is the dry chalk river, which will be seeded with chalk loving windflowers from the UK. Wild seeds like this can be sown directly onto the chalk and where the conditions are right they will germinate. This is to simulate the conditions of the site that had piles of chalk debris after the quarrying had finished, areas of open mosaic habitat that happened as a result of natural regeneration.

Wild Edge: Semi-Native Ground Cover Planting

Dry Chalk Riverbed

Flowering Lawn Mix

Play Area Planting

PLANTING PALETTE

Specimen Tree Planting

A selection of Native specimen swill be used in the park to enhance biodiversity and provide structure. Where space allows in the middle of the park, an Oak tree or two might be planted, where as the edges will contain medium sized trees such as the Maple and Birch.

Field Maple- Acer campestre

English Oak -Quercus robur

Silver Birch - Betula pendula

Hornbeam - Carpinus betulas

Grey Willow -Salix cinerea

Wild Cherry -Prunus avium

Rowan -Sorbus aucuparia

Fruit Tree Planting

A series of small fruiting trees will be planted around the park to provide additional seasonal interest and allow people the opportunity to pick fruits. Where apple are used, a range of cultivars will be specified to allow for cross pollination (and if possible, from local Kentish nurseries)

Common Plum -Prunus domestica

Apple -Malus domestica sp

Wild Edge Planting

This planting mix will provide the planting structure to the edge of the park. A selection of species have been used that include some UK natives alongside more ornamental species . The range of species have been chosen to provide seasonal interest, structure all year round and also a range of flowers that are attractive to bees and other insects.

Groundcover

Hylotelephium × mottramianum ‘Herbstfreude’

Geranium x Johnsons Blue’

Geranium macrorrhizum

Polygonum bistorta

Stachys byzantina

Hebe albicans

Achillea sp

Genista lydia

Dryopteris affinis

Alchemilla mollis

Specimen Shrubs

Common Hawthorn
Crateagus monogyna

Common Hazel
Corylus avellana

Guelder Rose
Viburnum opulus

Elderberry
Sambucus nigra

Flowering Currant
Ribes sanguineum

Play Area Planting

This planting mix will provide non toxic, robust structure to the play areas edges while providing interesting sensory experiences and opportunities for wildlife.

Groundcover

Lavendula angustifolia

Lonicera nitida

Stachys byzantina

Cornus Kousa ‘Blue Shadow’

Salix alba var. vitellina ‘Britzensis’

Dry River Seeding Mix

Sowing EM6 directly onto exposed chalk or limestone can produce interesting results; establishment will be slower than on well developed soils, but less management will be needed.

For further details refer to Emorsgate mix EM6F (Flower component)

Cowslip - Primula veris

Knapweed - Centaurea nigra

Yarrow - Achillea millefolium

Yellow Rattle - Rhinanthus minor

Salad Burnet - Sanguisorba minor

Hedging

The park will contain 2 hedge types. Privet (maintained at 1.2m high) will be used around the parks perimeter, providing an all year round screen to the parked cars around the park and providing a sense of enclosure within the park. Cornus sanguinea will be used as hedging around the community garden, providing seasonal interest and opportunities for colourful stems in the winter.

Dogwood- Cornus sanguinea

Privet -Ligustrum ovalifolium

Flowering lawn

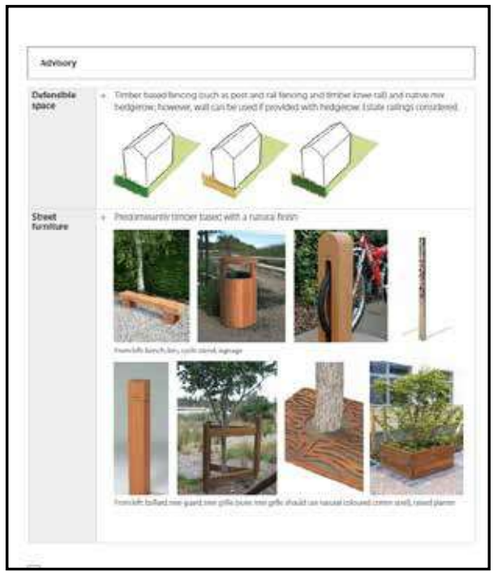
Lawn

Amenity lawn areas will be made up of a flowering lawn mix to enhance the overall biodiversity of the neighbourhood green. Flowering lawn mix to include grass, daisy, clover and buttercups, such as John Chambers Heritage Flowering Lawn Mix.

HARD LANDSCAPE PALETTE

The Parkland sits within the 'Farmland Heritage' Character Area and as such requires the following materials in order to comply with the AMP;

- Predominantly timber site furniture
- Mid or Silver grey block paving with white highlights



Hard materials in the Neighbourhood Green

Material: Composite wood effect decking to threshold detail in Neighbourhood Green, such as TimberTech 'Legacy Collection Ashwood composite deck'

Colour: Ashwood

Material: Block paving to footpaths, such as Marshalls 'Lunar Block Paving'

Finish: Textured Size: 400/200 x 200mm

Colour: Silver grey

Item: Bench such as Landmark 'Mettro 105 - Straight Bench', supplied with armrest and back support. Powder coated steel, FSC approved

Size: 1.8m long Color: RAL 5010 Gentian Blue

Item: Picnic Bench such as Landmark 'Mettro 106 - Picnic Bench'

Detail: Powder coated steel, FSC approved timber

Size: 1.8m long Color: RAL 5010 Gentian Blue

Item: Bespoke community planter

Detail: FSC approved treated softwood sleepers

Size: Various

Item: Pergola in community garden, such as Landmark Timber Pergola

Detail: FSC approved timber

Size: Various

Item: Invertebrate hotel such as Landmark 'Stamford - Bee Post'

Detail: FSC approved timber

Size: 100mm^2 x 1000/2000mm

Item: Dog Waste Bin such as Landmark 'Mettro 508 - Dog Waste Bin'

Detail: Powder coated steel, FSC approved timber

Size: 1.8m long Color: RAL 5010 Gentian Blue

Item: Litter Bin such as Landmark 'Mettro 107 Litterbin'

Detail: Timber and stainless steel

Size: 900mm high x 600mm

Colour: RAL 5010 Gentian Blue

Item: Cycle Stand, such as Landmark 'Sheffield Cycle Stand' Galvanised steel

Size: 900mm high x 260mm

Item: Timber Bollard such as Landmark 'Eye Wired Illuminated Timber Bollard' FSC Certified Oak, with integrated light fitting, 4 way weathered top

Size: H900mm, W150mm, D150mm

Colour: Natural

Item: Bollard such as Landmark 'Invia'

Colour: Natural Wood

Item: Information Panel, such as Landmark 'Aberdeen Lecturn Sign'

Size: 1700x250x5mm, 1.2m height

Colour: Natural Wood

Note: *All products are subject to costs and will be similar or approved*

WESTERN BOUNDARY DESIGN

DESIGN

① 3m wide leisure route in golden self binding gravel

② Timber jetty protruding into the swale edge to provide enhanced views over the natural landscape.

③ Footpath connections tying into adjacent development.

④ A variety of UK Native shrubs and tree species planted within the swale. Where possible, some trees will be translocated from chalk spine area on Site by the Site's ecologist.

⑤ Native hedge planting running alongside swale to provide important habitat for wildlife.

⑥ A range of native seed mixes planted along edge to create marginal habitat

⑦ Post and wire fence restricting access into the swale.

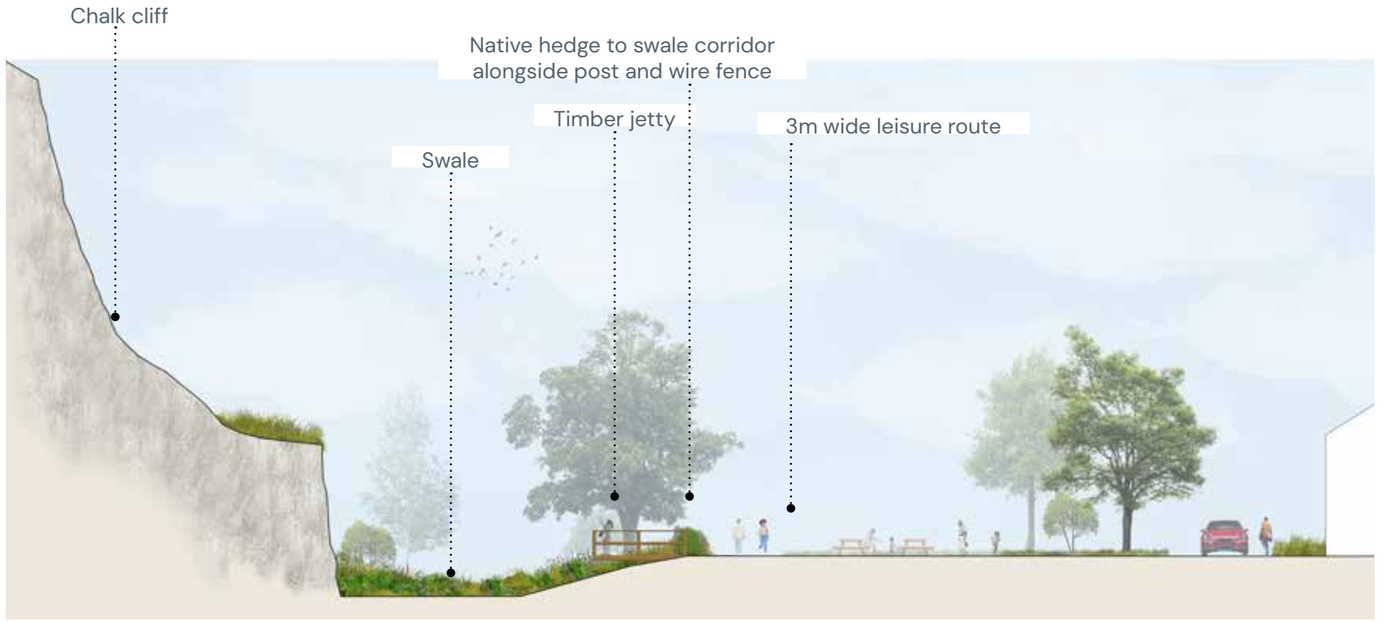
⑧ Plaza area connecting to Fastrack reflective of the opposite side to the road.

Ashmere South Western Boundary

This landscape will be a continuation of the North Western Boundary that has been constructed and already in use.

However, following the public consultation held by EDC (as summarised earlier in this document) the gym equipment that was previously prescribed for this area will be replaced by a Picnic Area. With a table tennis table being added into the Neighbourhood Green.

1. 3m wide leisure route in golden self binding gravel
2. Timber jetty protruding into the swale edge to provide enhanced views over the natural landscape.
3. Footpath connections tying into adjacent development.
4. A variety of UK Native shrubs and tree species planted within the swale.
5. Native hedge planting running alongside swale to provide important habitat for wildlife.
6. A range of native seed mixes planted along edge to create marginal habitat
7. Post and wire fence restricting access into the swale.
8. Picnic Area



E-EE

SCALE 1:300

PLANTING PALETTE

Specimen Tree Planting

A selection of native specimen trees and shrubs will be used in the landscape to enhance biodiversity and provide structure.

Overall, the landscape will provide substantial native trees that will grow to create an important wildlife corridor in the site.

Note: Suitable trees/shrubs removed from elsewhere on Site to be translocated to the south west buffer and replanted under supervision from the Site ecologist.

Native Trees

Field Maple- Acer campestre

English Oak -Quercus robur

Silver Birch - Betula pendula

Hornbeam - Carpinus betulas

Grey Willow -Salix cinerea

Wild Cherry -Prunus avium

Rowan -Sorbus aucuparia

European Aspen- Populus tremula

White willow -Salix alba

Grey Willow- Salix cinerea

Downy Birch -Betula pubescens

Wild Service Tree - Sorbus torminalis

Specimen Shrubs

Common Hawthorn
Crateagus monogyna

Common Hazel
Corylus avellana

Guelder Rose
Viburnum opulus

Elderberry
Sambucus nigra

Flowering Currant
Ribes sanguineum

Seeding Mixes

A selection of native seed mixes will be sown through the green corridor that relate to the likely ground conditions. These will include the flowering lawn mix in recreational areas (minimal), a general mix for most locations and then marginal and wetland seeding for the edges and lower parts of the basins.

This will create a rich tapestry of intertwining native meadow and wildflower species across the site.

Flowering lawn mix to include grass, daisy, clover and buttercups; such as John Chambers Heritage Flowering Lawn Mix.

Wildflower seed mixture; such as Emorsgate EM6.

Wetland grass area (to swales); such as Emorsgate EM8.

Wildflower seed mixture, suitable for sowing at the wet margins of streams and ditches; such as Emorsgate EP1.

Hedging

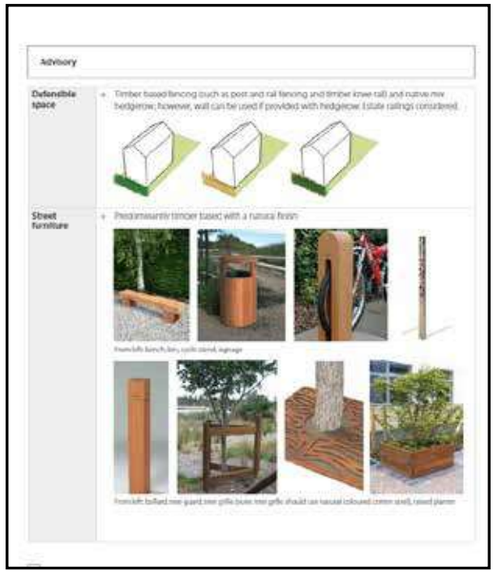
Hedging along the corridor will consist of a mix of native hedge species. This will predominantly be made up from Hawthorn with other species interspersed to create diversity.

Native hedgerow

Acer campastre, Alnus glutinosa, Corylus avellana, Crataegus monogyna, Ilex aquifolium, Malus sylvestris, Viburnum lantana, Prunus domestica, Prunus cerasifera, Prunus spinosa

HARD LANDSCAPE PALETTE

The hard materials palette around the periphery of the Site will use a corten colour to reflect the site's industrial history, as per the Ashmere Design Code.



Material: Composite wood effect decking to threshold detail in Neighbourhood Green, such as TimberTech 'Legacy Collection Ashwood composite deck'

Colour: Ashwood

Material: Breedon Gravel to footpaths

Finish: Textured

Colour: Golden Amber

Bailey Street Scene Greengate Seat

Details: Supplied with armrest and back support, Corten steel finish frame, FSC approved hardwood

Size: 1.8m long

Bailey Street Scene Holgate Bench

Details: Corten steel, FSC approved hardwood,

Size: 1.8m long

Bailey Street Scene Greengate Picnic Set

Details: Corten steel, FSC approved hardwood,
Size: 1.8m long

Material: Block Paving such as Marshalls 'Modal X Textured Paving'

Colour: Light Granite & Mid-Grey Granite

Size: 300x200mm

Material: Granite striations in South Western Boundary Plaza

Colour: Silver grey

Size: 100x100mm Laid in grid with 5 rows

Item: Dog Waste Bin such as Landmark 'Mettro 508 - Dog Waste Bin'

Detail: Powder coated steel

Size: 1.8m long

Bailey Street Scene Ascot Litter Bin

Details: Powder coated with laser cut lettering; Text to say 'General Waste' & 'Mixed Recycling'

Colour: Corten colour finish

Size: 1100mm high; 110L capacity

Item: Timber Bollard such as Landmark 'Eye Wired Illuminated Timber Bollard'

Detail: FSC Certified Oak, with integrated light fitting, 4 way weathered top

Size: H900mm, W150mm, D150mm Colour: Natural

Bailey Street Scene Piramidal Bollard

Detail: Corten steel finish

Size: H900mm, W100mm

Note: *All products are subject to costs and will be similar or approved*

LIGHTING STRATEGY

Illustrative Plan

Lighting within the South Western Boundary and Neighbourhood Green provides security and safety for pedestrians whilst leaving certain areas unlit due to ecological sensitivities. It is anticipated that this concept will be developed in further detail via condition by a lighting specialist but sets out the key concepts and hierarchy at this stage.

Further to this, key movement routes throughout the park will also be lit for those recreating within or passing through the park at night.

LEGEND

- Lighting Mast
- Illuminated bollard

ECOLOGICAL STATEMENT

Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet
DA10 1EE

17th September 2025 Our Ref: RT-MME-121456-2025-03

Ashmere Neighbourhood Green – Ecological Compliance Statement

Introduction
In August 2025 Middlemarch Environmental were commissioned to produce an Ecological Compliance Statement for the Ashmere Neighbourhood Green Reserved Matters Planning Application.

An initial Ecological Walkover of the site was undertaken by Jacob Kench, Principal Ecological Consultant and Arthur Jones Ecological Consultant on 5th April 2025 as part of the Ashmere Parcel 10 RMA, which runs through the middle of the two Ashmere Neighbourhood Green parcels. An updated Ecological Walkover was conducted by Ben Huxley on 2nd September 2025.

The site is split in two distinct areas. The eastern informal green zone which sits in the middle of Ashmere Parcel 10 developed space, hereafter referred to as the Neighbourhood Green, and the western natural area which will become parcel 24 under the Mini Biodiversity Action Plan document system, hereafter referred to as Parcel 24.

The following documents are the most recent to have been provided to Middlemarch. Comments have been made on these plans which we understand will contribute towards final plans for submission.

Document Name / Drawing Number	Author
Location Plan / DE_229_P10_001	Define
General Arrangement / DE_229_P10_002	Define
Landscape Design Statement For Parcel 10 Neighbourhood Green Whitecliffe, Ebbsfleet	Define
Parcel 10 PH4 RM Landscape / DE_229_P10_004	Define
Neighbourhood Green Landscape / DE_229_P10_003	Define

Table 1: Documentation Provided by Client

Current Site Condition Previous Mitigation
The site was previously made up of quarrying spoil heaps which had been left undisturbed from approximately 2010 until clearance and reprofiling work began in 2017. Middlemarch conducted site walkover surveys prior to groundworks starting and vegetation being cleared. Mitigation was conducted for nesting birds, herpetofauna and badgers *Meles meles*.

Clearance works were completed in 2020 but ongoing land forming and reprofiling of the site continued until 2022.

Habitats – Neighbourhood Green
The Neighbourhood Green area had previously been cleared and levelled as part of the handover for Ashmere Parcel 10. At the time of both the initial and updated walkover this section was entirely covered by bare ground. It appeared some seeding had taken place as part of dust suppression works but shoots of the planting were only just breaching the surface.

Habitats – Parcel 24
To the south of the parcel a large had been cleared and levelled as part of the completed groundworks and remained as bare ground. To the western boundary of the parcel the levels rose towards the bottom of the cliff face where an area of scrub dominated by butterfly bush *buddleia* with some bramble *Rubus fruticosus* ran north gradually narrowing. Small scattered patched of scrub were present along the cliff edge pushing further north through the parcel where areas of ephemeral/ short perennial vegetation began to dominate the parcel. Species including birdsfoot trefoil *Lotus corniculatus,* rough hawksbit *Leontodon hispidus,* bristly oxtounge *Helminthotheca echioides,*

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Email: jacob.kench@middlemarch-environmental.com Tel: 01676 525880

Black mustard *Brassica nigra,* teasel *Dipsacus* and mugwort *Artemisia vulgaris* were dominant, with scrub species such as buddleia and bramble beginning to colonise. A ditch had recently been dug running from a small headwall just beyond the northern boundary of the site south into the site to help hold water running off of developed land to the north. This was holding water at the time of the survey but no aquatic vegetation had established.

Species
During the early summer survey, a number of birds displaying nesting behaviour were noted within the scrub on the western boundary. These included Blackbird *Turdus merula,* Dunnock *Prunella modularis* and wren *Troglodytes troglodytes*. No nesting behaviour was noted in the September survey. A full nesting bird survey was not undertaken as the vegetation was not imminently being removed.

Fox *Vulpes vulpes* signs including footprints and droppings were noted on site although there was no den on site.

Key Species Considerations
Birds – The ephemeral/ short perennial vegetation on site provides suitable nesting conditions for skylark. It should therefore be cleared outside of nesting bird season. The scrub on site was providing suitable nesting habitat for a range of common species. A full check of vegetation on September the 2nd found no birds to be using the vegetation for nesting.

Any clearance should be undertaken outside of nesting bird season. Where this is not possible a nesting bird survey should be conducted by a suitably qualified ecologist prior to works commencing.

Dormice – Although the site boundary only included a small area of scrub offering poor species diversity, the scrub was deemed to offer suboptimal dormouse habitat and it was noted that the clearance was in close proximity to dormouse records on site, therefore dormouse tubes were installed along the scrub line in April 2025 to establish if the area could be cleared under a Precautionary Working Method Statement for dormice or whether a licence amendment to Natural England Licence 2017-31542-EPS-MIT-5 would be required.

Herpetofauna - Due to the sites isolated position and recent clearance it was considered unlikely the site would have been colonised by herpetofauna. Although vegetation clearance should be conducted under an ecological watching brief to ensure any herpetofauna on site can be moved to retained habitat.

Mammals – Field vole *Microtus agrestis* may have colonised the vegetated areas of the site as they were found on the neighbouring land parcel. Vegetation should therefore be cleared towards retained vegetation to encourage any individuals which may have moved into the site into retained habitat.

If a fox den is discovered in the vegetation works should stop and a suitably qualified ecologist contacted to establish next steps.

Design Principals
The latest and most comprehensive site wide Biodiversity Action Plan Document *Eastern Quarry Landscape and Ecological Management Plan RT-MME-121456-300 Rev A1* provides an outline for the strategy for the creation, enhancement and management for the whole site in order to benefit biodiversity. This Landscape and Ecological Management Plan focuses on a series of management plans for key habitats and areas. The Neighbourhood Green within this application does not fall within these management plans and is therefore covered by the general site wide recommendations listed below, but Parcel 24 does fall within this list and a Mini Biodiversity Action Plan for the area will now be written under report number RT-MME-121456-324. This will specify habitat and species requirements for the area to benefit biodiversity.

The following text has been taken from the Landscape and Ecological Management Plan and is relevant to the Neighbourhood Green section of this application.

Landscaping will play an integral role in the urban renaissance, in infrastructure, the public realm, regeneration initiatives, and development generally. Landscaping will promote biodiversity, with access throughout to high quality habitat creation.

Generic Planting Guidance
Native species chosen should reflect the project purpose, the physical conditions of the site, its biodiversity and landscape context.

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Email: jacob.kench@middlemarch-environmental.com Tel: 01676 525880

ECOLOGICAL STATEMENT

Informal Areas (Green Zones)
• 50% native tree & shrub stock
• 50 % non-native stock to be used as landscape features and visual focal points etc. but must be at least half of this must be wildlife friendly
• A minimum of 50% of the grass seeding is to comprise an appropriate wildflower/grass mix.

Species Enhancement Measures
A single species measure from the same report is also appropriate for this The Neighbourhood Green parcel;

- *Invertebrates – Super Invertebrate "Hotels" to be located in and around amenity and educational areas.*

Following review of the LEMP Middlemarch have consulted with Define on key ecological design principles for the Ashmere Neighbourhood Green. Below is a list of key principles that have been raised and changes made;

- **Native Woodland and Hedgerow –** Wherever possible there should be at attempt to increase native woodland cover on site. Through the clearance and development stage of the Eastern Quarry development there has been a loss of woodland on site leading to fragmentation of habitats. The semi-mature successional woodland which developed after quarrying works ceased has helped to support numerous protected species including dormice. To allow a healthy population of dormice to continue to exist on site it is important woodland habitat is created and existing habitat on site is linked. Parcel 24 forms a section in the key north – south link on site and therefore a perfect opportunity to link the northern and southern areas of habitat on site through a continuous vegetated belt of woodland and hedgerows. As well as the hedgerow already running through the site a request for further planting along the western boundary has been made.
- **Species Enhancement Measures –** As per the LEMP document species enhancement measures should be included in landscaping where appropriate. A super invertebrate hotel should therefore be added to the community garden as an educational area enhancement.

Conclusion
The following recommendations have been made:

- **Birds -** If vegetation clearance is conducted during nesting bird season (March-August inclusive) then a nesting bid check should be completed by a suitably qualified ecologist immediately prior to works starting.

- **Dormice –** Dormouse monitoring should continue on a monthly basis to establish if dormice are using the scrub on site. If dormice are found to be present a licence amendment to site wide licence, 2017-31542-EPS-MIT-5 will be required. If no dormice are found works can be undertaken under a Precautionary Working Method Statement.

- **Herpetofauna and other Mammals –** Clearance of remaining vegetation should be conducted under an ecological watching brief to ensure protection of any remaining small mammals or herpetofauna on site.

- **Landscape design -** All landscaping and species enhancement measures taken from the LEMP and listed above should be followed.

I trust that this report meets your requirement, however if you have any further queries, please do not hesitate to contact me.

Yours sincerely,
For and On Behalf of Middlemarch Environmental Ltd.

Jacob Kench
Principal Ecological Consultant

Checked and Approved By

Paul Roebuck MSc MCIEEM
Regional Manager: South

Middlemarch Environmental Ltd. Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
Email: jacob.kench@middlemarch-environmental.com Tel: 01676 525880

Eastern Quarry
Phase 1 Habitat Map - Ashmere Neighbourhood Green

Camland

C121456-2025-03-01	00
1:2,500	September 2025
JK	RP

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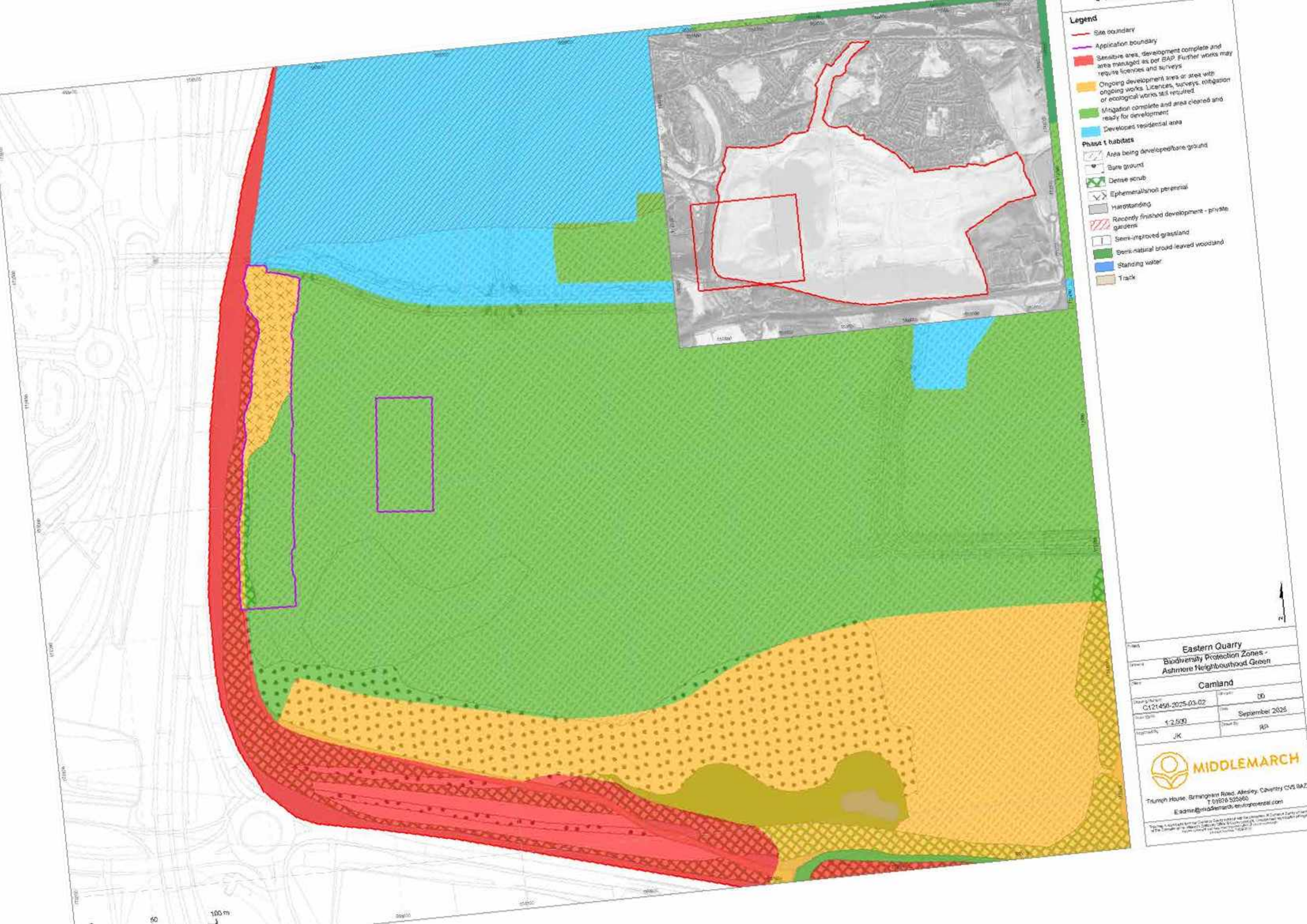
Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T: 01676 525880
E: admin@middlemarch-environmental.com


Legend
Site boundary
Application boundary
Sensitive area, development complete and area managed as per BAP. Further works may require licences and surveys
Ongoing development area or area with ongoing works. Licences, surveys, mitigation or ecological works still required
Mitigation complete and area cleared and ready for development
Developed residential area
Phase 1 habitats
Area being developed/bare ground
Bare ground
Dense scrub
Ephemeral/short perennial
Hardstanding
Recently finished development - private gardens
Semi-improved grassland
Semi-natural broad-leaved woodland
Standing water
Track
Eastern Quarry
Biodiversity Protection Zones - Ashmore Neighbourhood Green
Camland
C121458-2025-03-02
00
1:2,500
September 2025
JK
RA
MIDDLEMARCH
Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T: 01676 525880
E: admin@middlemarch-environmental.com
60
100 m

DRAINAGE STATEMENT

The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Job No:	B18075	**Date:**	23.09.25
Job Title:	Whitecliffe	**Engineer:**	RDT
Reference:	TN19 Ashmere P10 N'Hood Green Drainage Strategy	**Checked:**	DCT
Location:	Ebbsfleet, Kent	**Sheet No:**	1 of 1

Background:

This Technical Note has been produced to summarise the drainage strategy for the Neighbourhood Green serving Parcel 10 of the Ashmere Village at Whitecliffe (formerly Eastern Quarry), Ebbsfleet and to support a Reserved Matters Planning Application. It should be read in conjunction with the following documents: -

- Whitecliffe Water Management Plan
- Drawing No. B18075/153 P1 Whitecliffe Drainage Strategy Sheet 2
- Drawing No. B18075/305 P1 Ashmere P10 Neighbourhood Green – Proposed Drainage
- Report Ref 173535-04 Ashmere Phase 4 Drainage Technical Note
- Ashmere P10 MG Proposed SW - Surface water drainage calculations

Surface Water Drainage Strategy:

The drainage proposals have been developed to comply with the approved Water Management Plan, and the associated site wide drainage strategy (see drawing no. B18075-153).

It is proposed to drain the Neighbourhood Green via filter drains, linear drains and pipes to the strategic surface water drainage system serving the parcel.

The strategic network is comprised of sewers, swales, and lakes to convey surface water run off to a large attenuation lake, from where run off will be pumped to a new outfall into the river Thames at a rate controlled by a surface water pumping station. Strategic drainage of the parcel is described in more detail in the Ardent drainage technical note ref 173535-04.

Infiltration techniques are not suitable on the site due to the low permeability of the soil and the presence of an underlying principal aquifer.

The Neighbourhood Green will also accommodate an interim foul water pumping station, which is needed to avoid excessively deep strategic foul water sewers, thereby complying with Construction Design and Management Regulations to consider the safety of construction and maintenance personnel in the life of the facility.

The pumping station will be the subject of a 15m cordon sanitaire which will prevent habitable accommodation prevent development that would be adversely affected by smell. The pumps will be electric so noise will be kept to a minimum.

Flood Control

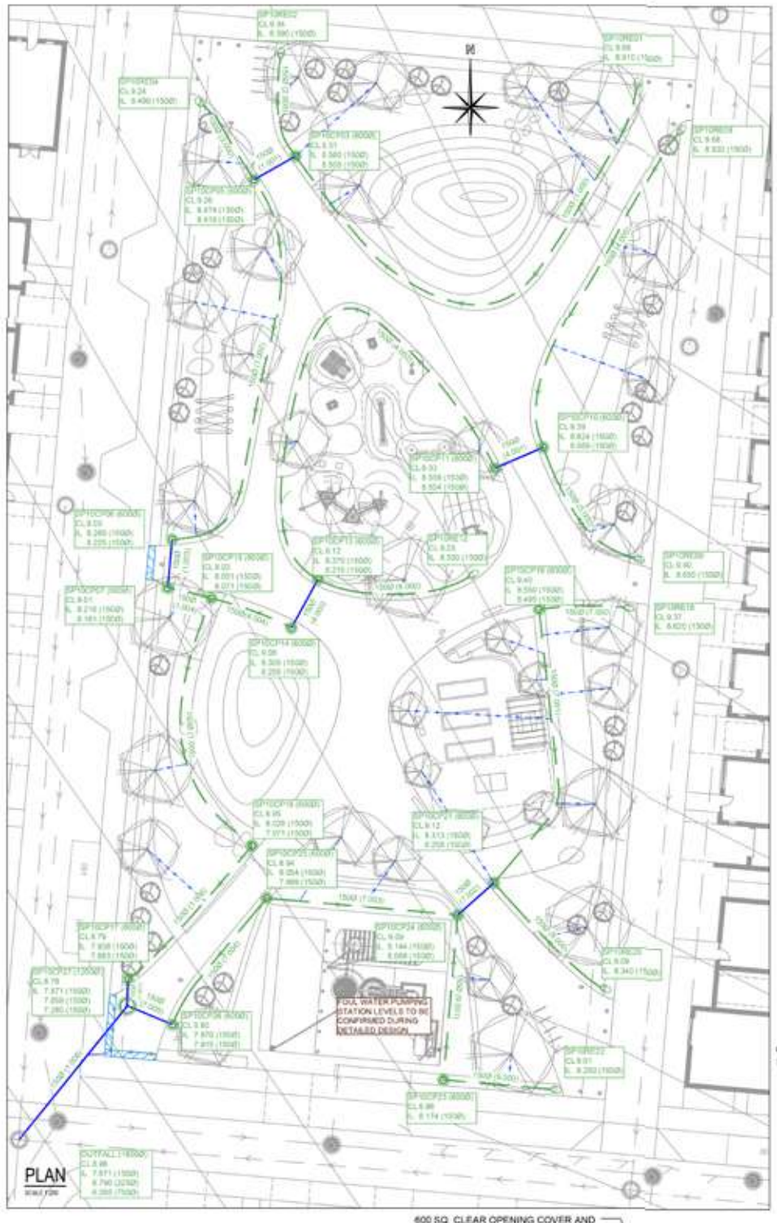
Sewers and swales have been sized such that there will be no flooding for a 1 in 30 year storm event, and any flooding occurring during a 1 in 100 year storm event plus a 20% allowance for climate change will be contained within carriageways below the top of kerb level and channelled away from properties towards the lakes or swales. The effects of an extreme storm event is covered further in the phase 4 drainage technical note. The roads and swales serving the wider development serve as a primary flood route for exceedance events.

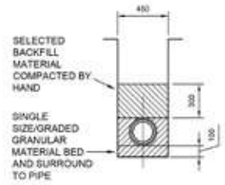
The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Water Quality:

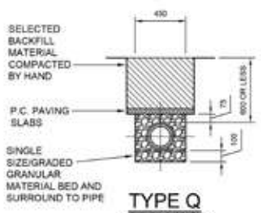
Surface water run-off from the neighbourhood green will be drained initially via filter drains which will provide the first part of a treatment train. The swales, both within the park and beyond, and lakes which form part of the strategic drainage network to which the green will eventually drain are also designed to act as part of the treatment train to ensure the surface water run-off from the development is treated to the standard required by the SUDS manual before being discharged to the River Thames.

In addition to the treatment provided by the swales and lakes, further treatment will be provided to run-off with the use of filter drains, and recirculation mains which will take water from the lakes and pump it to the top of the swales to provide additional treatment and a constant flow of water through the swales. The recirculation mains will also encourage flow across the lakes to avoid stagnation of standing water within the lakes.

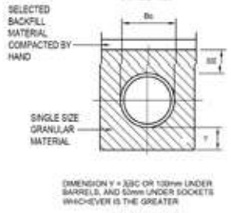




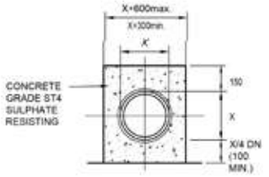
TYPE P BEDDING
SCALE 1:25


SELECTED BACKFILL MATERIAL COMPACTED BY HAND
P.C. PAVING SLABS
SINGLE SIZE/GRADED GRANULAR MATERIAL BED AND SURROUND TO PIPE

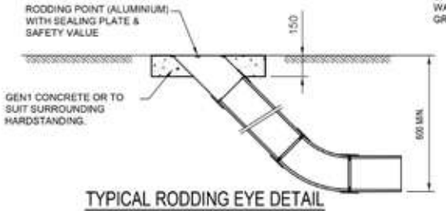
TYPE Q BEDDING
SCALE 1:25


SELECTED BACKFILL MATERIAL COMPACTED BY HAND
SINGLE SIZE GRANULAR MATERIAL
DIMENSION Y = 3/8C OR 100mm UNDER BARRELS, AND 50mm UNDER SOCKETS WHICHEVER IS THE GREATER

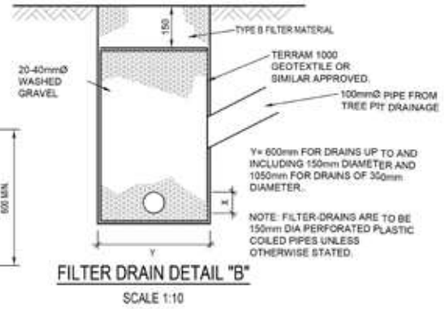
TYPE S BEDDING
SCALE 1:25



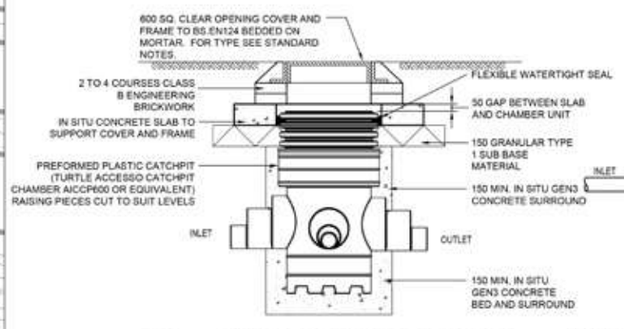
CLASS Z BEDDING
SCALE 1:25


RODDING POINT (ALUMINIUM) WITH SEALING PLATE & SAFETY VALUE
GEN1 CONCRETE OR TO SUIT SURROUNDING HARDSTANDING.
150
600 MIN.

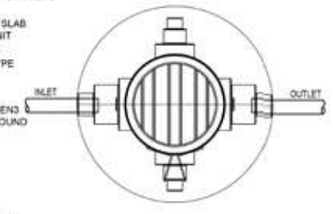
TYPICAL RODDING EYE DETAIL

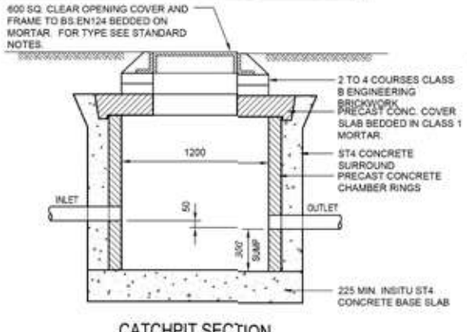

TYPE B FILTER MATERIAL
TERRAM 1000 GEOTEXTILE OR SIMILAR APPROVED.
20-40mmØ WASHED GRAVEL
100mmØ PIPE FROM TREE PIT DRAINAGE
Y= 600mm FOR DRAINS UP TO AND INCLUDING 150mm DIAMETER AND 1050mm FOR DRAINS OF 30mm DIAMETER..
NOTE: FILTER-DRAINS ARE TO BE 150mm DIA PERFORATED PLASTIC COILED PIPES UNLESS OTHERWISE STATED.

FILTER DRAIN DETAIL "B"
SCALE 1:10

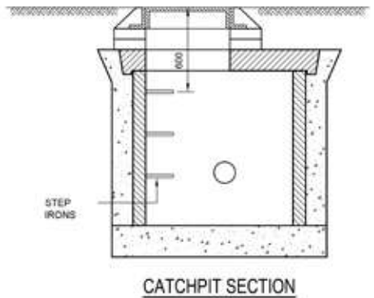

600 SQ. CLEAR OPENING COVER AND FRAME TO BS.EN124 BEDDED ON MORTAR. FOR TYPE SEE STANDARD NOTES.
2 TO 4 COURSES CLASS B ENGINEERING BRICKWORK
IN SITU CONCRETE SLAB TO SUPPORT COVER AND FRAME
PREFORMED PLASTIC CATCHPIT (TURTLE ACCESSO CATCHPIT CHAMBER AICCP600 OR EQUIVALENT) RAISING PIECES CUT TO SUIT LEVELS
FLEXIBLE WATERTIGHT SEAL
50 GAP BETWEEN SLAB AND CHAMBER UNIT
150 GRANULAR TYPE 1 SUB BASE MATERIAL
150 MIN. IN SITU GEN3 CONCRETE SURROUND
150 MIN. IN SITU GEN3 CONCRETE BED AND SURROUND
INLET
OUTLET

600mm DIAMETER CATCHPIT SECTION



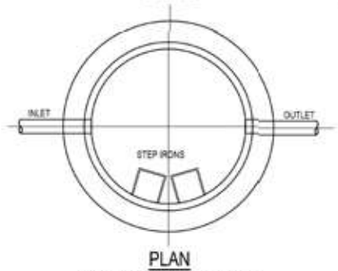

600 SQ. CLEAR OPENING COVER AND FRAME TO BS.EN124 BEDDED ON MORTAR. FOR TYPE SEE STANDARD NOTES.
2 TO 4 COURSES CLASS B ENGINEERING BRICKWORK
PRECAST CONC. COVER SLAB BEDDED IN CLASS 1 MORTAR.
ST4 CONCRETE SURROUND
PRECAST CONCRETE CHAMBER RINGS
1200
INLET
OUTLET
50
300
SUMP
225 MIN. INSITU ST4 CONCRETE BASE SLAB

CATCHPIT SECTION



CATCHPIT SECTION

600mm DIAMETER CATCHPIT PLAN
SCALE 1:20



PLAN
TYPICAL CATCHPIT DETAIL
SCALE 1:20

BEDDING NOTES

1. GRANULAR PIPE BEDDING MATERIAL FOR PIPES, AND BACKFILLING FOR TEMPORARY DRAINS (TRENCH SUB-DRAINS), SHALL CONSIST OF AGGREGATES FROM NATURAL SOURCES OR SINTERED PULVERIZED-FUEL ASH COMPLYING WITH THE RELEVANT PROVISIONS OF BS.882 AND BS.3797, PART 2 RESPECTIVELY, SIZED IN ACCORDANCE WITH THE FOLLOWING TABLE:

NOMINAL BORE OF PIPE (mm)	ALTERNATIVE AGGREGATE SIZES (mm)	
	SINGLE-SIZED	GRADED
100	10	-
150	10 OR 14	14 TO 5
225 - 300	10, 14 OR 20	14 TO 5 OR 20 TO 5
375 - 525	14 TO 20	14 TO 5 OR 20 TO 5
EXCEEDING	14, 20 OR 40	14 TO 5, 20 TO 5 OR 40 TO 5

2. SELECTED BACKFILL MATERIAL, WHETHER SELECTED FROM LOCALLY EXCAVATED MATERIAL OR IMPORTED, SHALL CONSIST OF UNIFORM, READILY COMPACTIBLE MATERIAL, FREE FROM VEGETABLE MATTER; BUILDING RUBBISH & FROZEN MATERIAL, OR MATERIALS SUSCEPTIBLE TO SPONTANEOUS COMBUSTION, & EXCLUDING CLAY OF LIQUID LIMIT GREATER THAN 80 AND/OR PLASTIC LIMIT GREATER THAN 55 AND MATERIALS OF EXCESSIVELY HIGH MOISTURE CONTENT. CLAY LUMPS AND STONES SHALL BE RETAINED ON 75mm AND 37.5mm SIEVES RESPECTIVELY.

3. COMPRESSIBLE FILLER FOR INTERRUPTING CONCRETE PROTECTION TO PIPELINES SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS.1142, PART 3 OR OTHER EQUALLY COMPRESSIBLE MATERIAL. THE THICKNESS OF COMPRESSIBLE FILLER SHALL BE AS FOLLOWS:

NOMINAL BORE OF PIPE (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
LESS THAN 450	18
450 - 1200	36
EXCEEDING 1200	54

4. THE CONTRACTOR IS TO PROTECT BURIED PIPES (PARTICULARLY SHALLOW PIPES) FROM DAMAGE CAUSED BY LOADS IMPOSED BY CONSTRUCTION PLANT.

5. BELOW ROADS AND OTHER PAVED AREAS TRENCHES SHALL BE BACKFILLED WITH DOT SPECIFICATION TYPE 1 SUB-BASE MATERIAL UP TO ROAD/PAVING FORMATION LEVEL. ALL OTHER TRENCHES,UNLESS OTHERWISE SPECIFIED SHALL BE BACKFILLED TO FINISHED GROUND LEVEL OR UNDERSIDE OF TOPSOIL LAYER WITH WELL COMPACTED EXCAVATED MATERIAL.

GRANULAR BEDDINGS

1. DIMENSION Y: 1/6 BC OR 100mm UNDER BARRELS, AND 50mm MIN. UNDER SOCKETS WHICHEVER IS THE GREATER (400 MAX.). ROCK ETC 1/4 BC AND 150mm MIN UNDER SOCKETS (400mm MAX.)
2. DN : NOMINAL BORE OF PIPE
3. BC : EXTERNAL DIAMETER OF PIPE BARREL

CONCRETE BEDDINGS

1. THE USE OF GRANULAR BEDDINGS BELOW CONCRETE BEDDINGS (BEDDING TYPES A2,B4,M) ARE FOR USE IN WET CONDITIONS.
2. CONCRETE CRADLES MAY EXTEND TO SIDES OF TRENCH.
3. TRANSVERSE STEEL TO BE 0.4% MIN OF CONCRETE AT X-X (Rf=0.4) UNLESS OTHERWISE STATED.
4. BEDDING BENEATH & AT SIDES OF PIPE TO BE WELL COMPACTED
5. BEDDING/BACKFILL DIRECTLY ABOVE PIPE TO BE LIGHTLY COMPACTED BY HAND.
6. DIMENSION Y: 1/6BC OR 100mm UNDER BARRELS, AND 50mm UNDER SOCKETS WHICHEVER IS GREATER (SUBJECT TO 400mm MAX.)
7. DN = NOMINAL BORE OF PIPE.
8. BC = EXTERNAL DIAMETER OF PIPE BARREL

TRENCH WIDTH

1. THE MAXIMUM TRENCH WIDTHS ARE TO BE AS SHOWN BELOW UNLESS THE APPROVAL OF THE ENGINEER IS OBTAINED.

INTERNAL PIPE DIAMETER	MAXIMUM TRENCH WIDTH
100	600
150	600
225	700
300	850
375	1050
450	1150
525	1200
600	1350
675	1450
750	1500
825	1600
900	1900
975	2000
1050	2100
1200	2300

GENERAL NOTES

1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF CAMLAND CONSULTING LTD.
1.2 DO NOT SCALE FROM THIS DRAWING.

DRAINAGE NOTES:

1. THE CONTRACTOR IS TO CHECK ALL INFORMATION PROVIDED PRIOR TO COmmENCING WORKS, AND SEEK CLARIFICATION FROM THE ENGINEER IN RESPECT TO ANY AMBIGUITIES FOUND.
2. ALL COVERS WITHIN HARDSTANDING AREAS TO HAVE RECESSED COVERS TO ALLOW FOR SURFACING INFILL.
3. PIPE MATERIALS SHALL BE AS FOLLOWS:
   DIAMETER
   1000 - 2250 - CLASS 120 CLAYWARE TO BS EN 295
   NB. UPVC PIPES TO BS EN 1401-1 1996 MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER.
4. CLAY AND CONCRETE PIPES SHALL BE BEDDED ON CLASS S BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Z BEDDING. UPVC PIPES SHALL BE BEDDED ON CLASS P BEDDING UNLESS COVER IS LESS THAN 0.8m IN TRAFFICKED AREAS, THEN CLASS Q BEDDING.

KEY:

- PROPOSED S104 SURFACE WATER DRAINAGE
- PROPOSED S104 FOUL WATER DRAINAGE
- PROPOSED FILTER DRAIN TO DETAIL B
- LOCATION OF PROPOSED 100mmØ PLASTIC PIPE TO DRAIN TREE PITS
- PROPOSED STORM DRAIN MIN. 150mmØ UNLESS OTHERWISE STATED. RECYCLED SUB-BASE TO BE LAID ABOVE PIPE BEDDING TO UNDERSIDE OF FOOTPATH CONSTRUCTION
- PROPOSED RODDING EYE ACCESS REFER TYPICAL RODDING EYE DETAIL
- PROPOSED CATCHPIT, INVERT LEVELS REFER TO INCOMING PIPE AND OUTGOING PIPE WHERE DIAMETER DIFFERS
- PROPOSED TREE TO BE POSITIVELY DRAINED. OUTFALL FROM TREE PIT ASSUMED TO BE 750mm TO INVERT LEVEL.
- LINEAR DRAIN WITH SUMP OUTLET UNIT.

KEY PLAN
NOT TO SCALE

Rev.	Amendments	Date	By
P1	INITIAL ISSUE	23.09.25	RDT

Revisions

CAMLAND CONSULTING
Land · Development · Construction

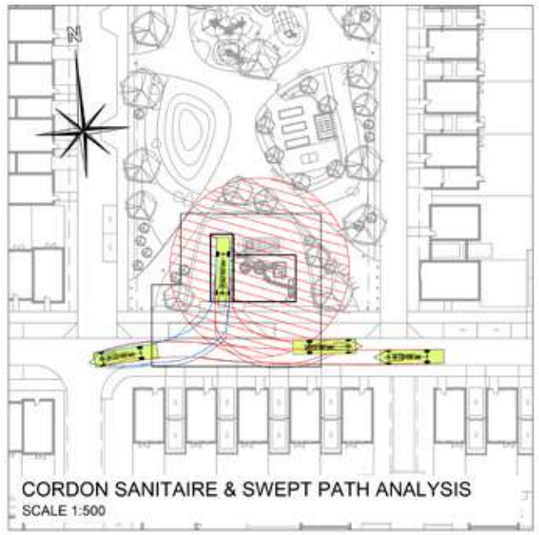
Camland Consulting Ltd
The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

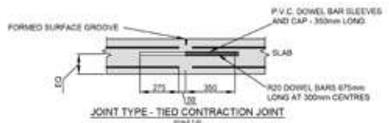
Client
EASTERN QUARRY LTD.

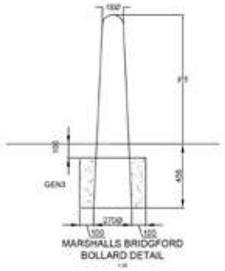
Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
INFRASTRUCTURE

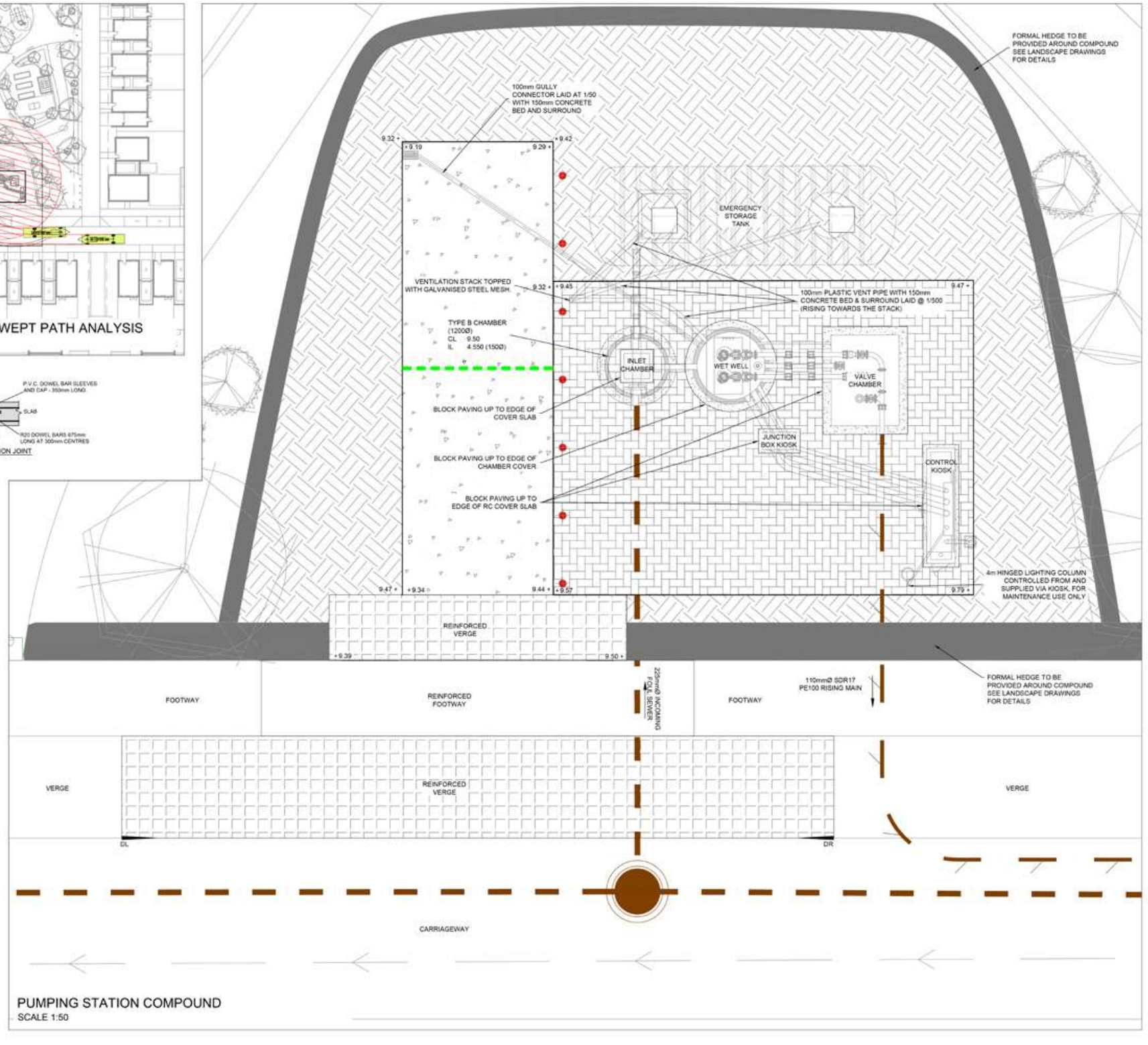
Drawing
ASHMERE PARCEL 10
NEIGHBOURHOOD GREEN
PROPOSED DRAINAGE

Scales 1:250 At original size A1
Drawn RDT Checked DCT
Date 23.09.25
Status PRELIMINARY
Drawing No. B18075/369 Rev. P1




FORMED SURFACE GROOVE
P.V.C. DOWEL BAR SLEEVES AND CAP - 350mm LONG
SLAB
R20 DOWEL BARS 675mm LONG AT 300mm CENTRES
JOINT TYPE - TIED CONTRACTION JOINT




FORMAL HEDGE TO BE PROVIDED AROUND COMPOUND SEE LANDSCAPE DRAWINGS FOR DETAILS
100mm GULLY CONNECTOR LAID AT 1/50 WITH 150mm CONCRETE BED AND SURROUND
EMERGENCY STORAGE TANK
VENTILATION STACK TOPPED WITH GALVANISED STEEL MESH.
100mm PLASTIC VENT PIPE WITH 150mm CONCRETE BED & SURROUND LAID @ 1/500 (RISING TOWARDS THE STACK)
TYPE B CHAMBER (1200Ø) CL 9.50 IL 4.550 (150Ø)
INLET CHAMBER
WET WELL
VALVE CHAMBER
JUNCTION BOX KIOSK
CONTROL KIOSK
BLOCK PAVING UP TO EDGE OF COVER SLAB
BLOCK PAVING UP TO EDGE OF CHAMBER COVER
BLOCK PAVING UP TO EDGE OF RC COVER SLAB
4m HINGED LIGHTING COLUMN CONTROLLED FROM AND SUPPLIED VIA KIOSK, FOR MAINTENANCE USE ONLY
REINFORCED VERGE
FOOTWAY
REINFORCED FOOTWAY
225mmØ INCOMING FOUL SEWER
110mmØ SDR17 PE100 RISING MAIN
FORMAL HEDGE TO BE PROVIDED AROUND COMPOUND SEE LANDSCAPE DRAWINGS FOR DETAILS
VERGE
CARRIAGEWAY
DL
DR
PUMPING STATION COMPOUND
SCALE 1:50

GENERAL NOTES

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1.2 DO NOT SCALE FROM THIS DRAWING.

1.3. LOCATIONS OF ALL EXISTING SERVICES ON-SITE TO BE CONFIRMED & PROVIDED TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORKS.

1.4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT CAMLAND CONSULTING LTD DRAWINGS & SPECIFICATIONS.

SWEPT PATH ANALYSIS NOTES

2.1 THE SWEPT PATH ANALYSIS HAS BEEN CARRIED OUT USING AUTODESK VEHICLE TRACKING 2025.

KEY

STRENGTHENED VERGE FOR MAINTENANCE ACCESS
CELLULAR CONCRETE BLOCKS INFILLED WITH SEEDED TOPSOIL
200mm TYPE 1 SUB BASE

BLOCK PAVING TO COMPOUND
80mm MARSHALLS KEYBLOCK PAVING PATTERN - HERRINGBONE.
COLOUR - NATURAL
30mm SAND
200mm TYPE 1 SUB BASE

RC SLAB
150mm THICK PAV2 RC SLAB WITH BRUSHED FINISH
1 LAYER A393 FABRIC WITH 50mm COVER FROM TOP. ON 1200 GAUGE POLYTHENE SLIP MEMBRANE WITH 300mm LAP. ON 150mm COMPACTED TYPE 1

SEEDED TOPSOIL
150mm THICK

RC SLAB CONTRACTION JOINT

HB2 KERB WITH 125mm UPSTAND

PCC FLUSH EDGING

915mm MARSHALLS BRIDGFORD BOLLARD (SEE DETAIL RIGHT)

10.300 + PROPOSED GROUND LEVEL

DL / DR PCC DROPPER KERB (LEFT / RIGHT HAND)

P1	INITIAL ISSUE.	23.09.25 RDT
Rev.	Amendments	Date By

Revisions

CAMLAND CONSULTING
Land - Development - Construction

Camland Consulting Ltd
The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Client
EASTERN QUARRY Ltd.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
INFRASTRUCTURE

Drawing
P10 NEIGHBOURHOOD GREEN PUMPING STATION COMPOUND AND CONRDON SANITAIRE

Scales 1:250 At original size A1

Drawn RDT Date 23.09.25 Checked DCT

Status PRELIMINARY

Drawing No. B18075/368 Rev. P1

AS11
AS10
AS18
AS17
ASVG
ASPS
PRIMARY SCHOOL
AS32
AS33
AS19
AS20
AS24
AS18
ASV2
ASV3
AS34
AS22
ASNG2
AS21
AS25
AS26
AS28
ASNG3
AS35
AS36
AS23
AS27
AS29
AS37
AS38
AS39
AS40
AS41
SOUTHERN LAKE
WATERING STREET
AL30
PATRICK PARSON
EASTERN QUARRY LTD
WHITECLIFFE
DRAINAGE STRATEGY
SHEET 3
PRELIMINARY

EBBSFLEET GARDEN CITY

WHITECLIFFE

© DEFINE

camland developments ltd

Define.

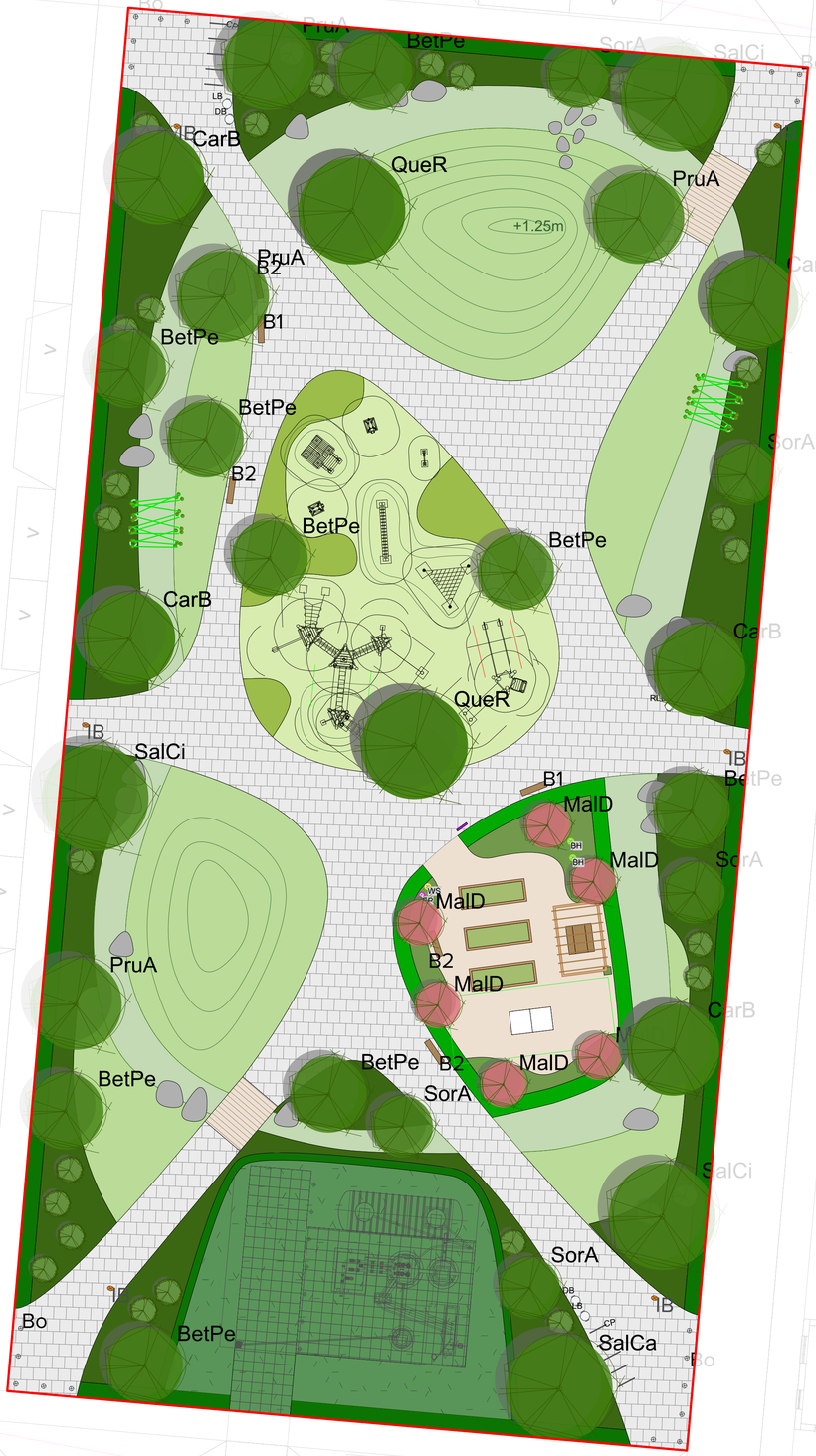
LEGEND

Reserved Matters Application Boundary

SCALE 1:750
0m 5 10 25

Rev	Description	Date
		Rev
DE_229_P10_002		Drg No
Camland		Client
Parcel 10 PH4 RM Landscape		Project
General Arrangement		Title
1:750 @ A1		Scale

Define.



LEGEND

Reserved Matters Application Boundary

Proposed services; See engineers drawings for details and specifications.

Hard Landscape

TimberTech 'Legacy Collection Ashwood Composite Deck'; Colour Ashwood; or similar approved.

Concrete block paving to footpath; Colour silver grey; 200/400 x 200mm; such as Marshalls Lunar Textured Paving'; or similar approved.

Grasscrete used to facilitate infrequent vehicular maintenance access.

Coloured asphalt to community garden; Tarmac Ulticolour; Colour light buff; or similar approved.

Street Furniture & Play Equipment

B1 — Steel and timber seat with back and arm rests; Landmark Mettro 105 Bench; 1.8m; FSC Approved Douglas Fir; Powder Coated Steel; Colour RAL 5010 Gentian Blue; or similar approved.

B2 — Steel and timber seat without back and arm rests; Landmark Mettro 105 Bench; 1.8m; FSC Approved Douglas Fir; Powder Coated Steel; Colour RAL 5010 Gentian Blue; or similar approved.

B3 — Steel and timber picnic bench; Landmark Mettro 106 Picnic Bench; 1.8m; Douglas Fir; Powder Coated Steel; Colour RAL 5010 Gentian Blue; or similar approved.

1.5m wide by variable length community use planter; Timber raised bed; Treated Softwood Sleepers; 2250x1500x125mm; or similar approved.

IP — Information Panel; Landmark 'Aberdeen Lecturn Sign'; 1.2m height x 1700x250x5mm overall; Powder Coated Steel; Colour RAL 5010 Gentian Blue; or similar approved.

Cycle Stands; Landmark 'Sheffield Cycle Stand'; Galvanised steel; 900mm x 260mm' or similar approved.

LB — Litter Bin; Landmark 'Mettro 107 Litterbin'; Timber and stainless steel; 900mm high x 600mm wide; Colour RAL 5010 Gentian Blue; or similar approved.

RLB — Recycling Litter Bin; Landmark 'Mettro 107 Litterbin'; Timber and stainless steel; 900mm high x 600mm wide; Colour RAL 5010 Gentian Blue; or similar approved.

DB — Dog Waste Bin; Landmark 'Mettro 508 Dog Waste Bin'; Powder Coated Steel' Colour RAL 5010 Gentian Blue; 1.8m height; or similar approved.

Heavy duty pergola; Landmark Street Furniture; FSC approved hardwood; vertical wires on posts for plant guiding; 4650 mm (L) 3000(W) x 2210 (H); or similar approved.

EP — External electric pop up point

WS — Water supply (Brick enclosed)

BH — Invertebrate hotel; Landmark 'Stamford - Bee Post'; 100mm² x 2000mm/1000mm; or similar approved.

CY — Timber compost bin. Garden Works Direct. FSC Treble Wooden Classic Style Compost Bin. Designed for use with the community planters. 2550mm (L) x 850mm (W); or similar approved.

1B — Low level Illuminated bollard; Landmark 'Eye Wired Illuminated Timber Bollard'; FSC certified Oak; 150x150x900mm; Surfaced fixed; or similar approved.

Bo — Bollard; Landmark 'Invia'; 150x150x1250mm root fixed; Colour natural wood; or similar approved.

Soft Landscape

Meadow Seed Mix
Planted with Flowering Lawn seeding mix such as John Chambers Heritage Flowering Lawn Mix or similar; planted at 4g/m²

Meadow Seed Mix to Grasscrete
Flowering Lawn seeding mix to grasscrete; such as Emorsgate EL1 or similar; planted at 4g/m²

Dry River
Recycled crushed chalk from the site to create a chalk substrate to be seeded with appropriate calcareous seeding mix such as 'Emorsgate EM6F Meadow Mixture for chalk and limestone soils'. Planting at 4gm² or similar approved product.

Grass matting safety surfacing to play area
Safety surfacing to play area planted with amenity wear tolerant grass mix such as Emorsgate EG22, safety mats in accordance with BSEN1177:2018 or similar approved product

Play Area Planting
Play Area planting to include shrub species planted in 3L pots using the following species: Lonicera nitida, Lavendula angutoifolia, Stachys byzantia, Cornus kousa and Salix 'britensis'

Semi native groundcover mix

Groundcover 3-5L planted at 4per m2
Sedum spectablis
Stachys byzantia
Geranium 'Johnsons Blue'
Geranium macrorrhizum
Polygonum bistorta
Dryopteris affinis
Dryopteris Felix Mas
Alchemilla mollis
Genista lydia
Achilla sp.

Specimen Shrubs (10L Pots)

Corylus avellana
Cornius sanguinea
Viburnum opulus
Ribes sanguineum
Crataegus monogyna

Willow walk; timber stakes for whips

Specimen Tree Planting

Code	Species	Girth	Height	Root	Clear Stem
Quer	Quercus robur	16-18cm	4-4.5m	RB	-
BetPe	Betula pendula	14-16cm	4-4.5m	RB	Multi-stem
PruA	Prunus avium	12-14cm	3.5-4m	RB	-
Carb	Carpinus betulas	12-14cm	3.5-4m	RB	-
SorA	Sorbus aucuparia	12-14cm	2.5-3m	RB	-
SalCi	Salix cinerea	12-14cm	2.5-3m	RB	-

Specimen Fruit Trees

Code	Species	Girth	Height	Root	Clear Stem
MalD	Malus domestica sp.	8-10cm	2m+	RB	-

Note: *Fruit trees to be selected from a variety of edible fruiting species to aid cross pollination. Local varieties are preferred if available.*

Formal Hedge

Species	Height	Root	Density
Ligustrum ovalifolium	80-100cm	Transplants	3 plants per linear metre
Cornus sanguineum	80-100cm	Transplants	3 plants per linear metre

Play Equipment

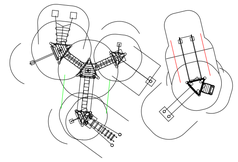
Mounds to Lawn

Natural Play Boulders; Locally Sourced Ragstone; 600-1000mm and max height 600mm; Smooth; Min. 400mm spacing

Wobbly Wild Boar

Triangular Platform Combination Equipment with rope bridges, slide, running boards, climbing net, etc.

Tic Tac Toe Board



Toddler's Platform Hut

Balance Blocks

Triangular Climbing Net

Table Tennis table

SCALE 1:200

0m 1 2 3 5 10

Rev	Description	Date

Rev	
Drg No	DE_229_P10_003
Client	Camland
Project	Parcel 10 PH4 RM Landscape
Title	Neighbourhood Green Landscape
Scale	1:200 @ A1

LEGEND

Reserved Matters Application Boundary

Proposed services; See engineers drawings for details and specifications.

Hard Landscape

Timber jetty with anti slip surface. To match Ashmere North Western Buffer to CTS drawings and specification.

Footpath surface material; Breedon gravel 'Wayfarer' or similar approved product.

Concrete block paving; Marshalls Modal Textured Sett Paving; 300x200x80mm laid stretcher bond; Colour: Light Granite, Mid-Grey Granite

Granite sett paving laid as flush banding through paving; 100x100x100mm laid in a grid; 5 rows; Colour: silver grey

Street Furniture & Play Equipment

B1 Bailey Street Scene Greengate Seat with armrests and back; 1.8m long; Colour Corten; corten steel finish frame and FSC approved Iroko hardwood; or similar approved.

B2 Bailey Street Scene Holgate Bench; no armrests and no back; 1.8m long; Colour Corten; corten steel finish frame and FSC approved Iroko hardwood; or similar approved.

B3 Bailey Street Scene Greengate Picnic Set; 1.8m long; Colour Corten; Corten steel finish frame and FSC approved Iroko hardwood; or similar approved.

IB Low level Illuminated bollard; Landmark 'Eye Wired Illuminated Timber Bollard'; FSC certified Oak; 150x150x900mm; Surfaced fixed; or similar approved.

LB Bailey Street Scene; Ascot Litter Bin; powder coated in a corten colour finish; 1110mm high; 110L capacity. Laser cut lettering; Text to say 'General Waste'; or similar approved.

RB Bailey Street Scene; Ascot Litter Bin; powder coated in a corten colour finish; 1110mm high; 110L capacity. Laser cut lettering; Text to say 'Mixed recycling'; or similar approved.

DB Dog Waste Bin; Landmark 'Mettro 508 Dog Waste Bin'; Powder Coated Steel' Colour Corten; 1.8m height; or similar approved.

Bo Bailey Street Scene Piramidal Bollard; bollard; H900mm; W100mm sq; Corten steel; or similar approved.

Boundaries

Timber knee rail; Jacksons Diamond shaped fencing 0.9m; 2700mm long railing 70x70mm; or similar approved.

Timber post and rail fence; or similar approved

Timber post and wire mesh fencing; cattle fence; with 2 runs of wire at the top of posts; to swales; or similar approved

Soft Landscape

Amenity Grass Seeding
Emorsgate EG22 - wear tollerant tuf grass mixture or similar. Planted at 25gm².

Meadow Seed Mix
Emorsgate EM6 Meadow Mixture for chalk and limestone soils. Planted at 4gm².

Grass matting safety surfacing
Safety surfacing to play area, safety mats in accordance with BSEN1177:2018 or similar approved product

Wetland Meadow Seeding
Wetland meadow area to swales; Suitable seed mixture for wetlands; Emorsgate EM8 Meadow mixture for wetlands. Planted at 4gm².

Pond Edge Seed Mix
To be oversown into proposed wetland meadow areas in selected locations. Emorsgate EP1 Basic general purpose wildflowers. Planted at 4gm².

Ground Cover Planting

Prunus laurocerasus	Achillea
Lavandula angustifolia	Leucanthemum vulgare
Genista lydia	Dryopteris affinis
Veronica albicans	Polygonum bistorta
	Geranium macrorrhizum
	Geranium x 'Johnsons Blue'

Native Hedge

Species	Height	Root	Density
Acer campastre	80-100cm	Transplants	5%
Alnus glutinosa	80-100cm	Transplants	5%
Corylus avellana	80-100cm	Transplants	5%
Crateagus monogyna	80-100cm	Transplants	55%
Ilex aquifolium	80-100cm	Transplants	5%
Malus sylvestris	80-100cm	Transplants	5%
Viburnum lantana	80-100cm	Transplants	5%
Prunus domestica	80-100cm	Transplants	5%
Prunus cerasifera	80-100cm	Transplants	5%
Prunus spinosa	80-100cm	Transplants	5%

Double staggered row, 300mm apart between plants and rows. Planted with spiral rabbit guards and timber post and wire fence.

Specimen Tree Planting

Code	Species	Girth	Height	Root	Clear Stem
CarB	Carpinus betulus	16-18cm	4-5m	RB	-
TilE	Tilia europaea	16-18cm	4-5m	RB	-
SalA	Salix alba	16-18cm	4-5m	RB	Multi-stem
QueR	Quercus robur	14-16cm	4-4.5m	RB	-
BetPe	Betula pendula	14-16cm	4-4.5m	RB	-
PruA	Prunus avium	12-14cm	3-4m	RB	Multi-stem
PopT	Populous tremula	12-14cm	3-4m	RB	-
AlnG	Alnus glutinosa	12-14cm	3-4m	RB	-
BetPu	Betula pubescens	8-10cm	2-3m	RB	Multi-stem
SorA	Sorbus aucuparia	8-10cm	2-3m	RB	-
SalCa	Salix caprea	8-10cm	2-3m	RB	-
SalCi	Salix cinerea	8-10cm	2-3m	RB	-
SorT	Sorbus torminalis	8-10cm	2-3m	RB	-

Specimen Shrub Planting

Species	Height	Size	Root
Crataegus monogyna	1-1.5m	15L	Container
Corylus avellana	1-1.5m	15L	Container
Euonymus europaeus	1-1.5m	15L	Container
Viburnum opulus	1-1.5m	15L	Container
Salix caprea	1-1.5m	15L	Container
Salix viminalis	1-1.5m	15L	Container
Salix nigra 'Betufolia'	1-1.5m	15L	Container
Sambucus nigra	1-1.5m	15L	Container
Viburnum lantana	1-1.5m	15L	Container
Ilex aquifolium	1-1.5m	15L	Container

Note: *Suitable trees/shrubs removed from elsewhere on Site to be translocated to the south west buffer and replanted under supervision from the Site ecologist.*

Specimen Fruit Trees

Code	Species	Girth	Height	Root	Clear Stem
MalD	Malus domestica sp.	8-10cm	2m+	RB	-
PruD	Prunus domestica sp.	8-10cm	2m+	RB	-
PyrC	Pryus communis sp.	8-10cm	2m+	RB	-

Note: *Fruit trees (particularly the apple trees) to be selected from a variety of edible fruiting species to aid cross pollination. Local varieties are preferred if available.*

Play Equipment

Fish Rocker

Sailing Boat

Totter Beam

SCALE 1:500
1 5 25
0m 3 10

N

Rev	Description	Date
		Rev
DE_229_P10_004		Drg No
Camland		Client
Parcel 10 PH4 RM Landscape		Project
South Western Buffer Landscape		Title
1:500 @ A1		Scale

CAMLAND CONSULTING
Land · Development · Construction

The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Job No:	B18075	**Date:**	23.09.25
Job Title:	Whitecliffe	**Engineer:**	RDT
Reference:	TN19 Ashmere P10 N'Hood Green Drainage Strategy	**Checked:**	DCT
Location:	Ebbsfleet, Kent	**Sheet No:**	1 of 1

Background:

This Technical Note has been produced to summarise the drainage strategy for the Neighbourhood Green serving Parcel 10 of the Ashmere Village at Whitecliffe (formerly Eastern Quarry), Ebbsfleet and to support a Reserved Matters Planning Application. It should be read in conjunction with the following documents: -

- Whitecliffe Water Management Plan
- Drawing No. B18075/153 P1 Whitecliffe Drainage Strategy Sheet 2
- Drawing No. B18075/305 P1 Ashmere P10 Neighbourhood Green – Proposed Drainage
- Report Ref 173535-04 Ashmere Phase 4 Drainage Technical Note
- Ashmere P10 MG Proposed SW - Surface water drainage calculations

Surface Water Drainage Strategy:

The drainage proposals have been developed to comply with the approved Water Management Plan, and the associated site wide drainage strategy (see drawing no. B18075-153).

It is proposed to drain the Neighbourhood Green via filter drains, linear drains and pipes to the strategic surface water drainage system serving the parcel.

The strategic network is comprised of sewers, swales, and lakes to convey surface water run off to a large attenuation lake, from where run off will be pumped to a new outfall into the river Thames at a rate controlled by a surface water pumping station. Strategic drainage of the parcel is described in more detail in the Ardent drainage technical note ref 173535-04.

Infiltration techniques are not suitable on the site due to the low permeability of the soil and the presence of an underlying principal aquifer.

The Neighbourhood Green will also accommodate an interim foul water pumping station, which is needed to avoid excessively deep strategic foul water sewers, thereby complying with Construction Design and Management Regulations to consider the safety of construction and maintenance personnel in the life of the facility.

The pumping station will be the subject of a 15m cordon sanitaire which will prevent habitable accommodation prevent development that would be adversely affected by smell. The pumps will be electric so noise will be kept to a minimum.

Flood Control

Sewers and swales have been sized such that there will be no flooding for a 1 in 30 year storm event, and any flooding occurring during a 1 in 100 year storm event plus a 20% allowance for climate change will be contained within carriageways below the top of kerb level and channelled away from properties towards the lakes or swales. The effects of an extreme storm event is covered further in the phase 4 drainage technical note. The roads and swales serving the wider development serve as a primary flood route for exceedance events.

The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Water Quality:

Surface water run-off from the neighbourhood green will be drained initially via filter drains which will provide the first part of a treatment train. The swales, both within the park and beyond, and lakes which form part of the strategic drainage network to which the green will eventually drain are also designed to act as part of the treatment train to ensure the surface water run-off from the development is treated to the standard required by the SUDS manual before being discharged to the River Thames.

In addition to the treatment provided by the swales and lakes, further treatment will be provided to run-off with the use of filter drains, and recirculation mains which will take water from the lakes and pump it to the top of the swales to provide additional treatment and a constant flow of water through the swales. The recirculation mains will also encourage flow across the lakes to avoid stagnation of standing water within the lakes.

Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet
DA10 1EE

6th January 2026 Our Ref: RT-MME-121456-2025-06

Ashmere Neighbourhood Green – Dormouse Update

Introduction
In August 2025 Middlemarch Environmental were commissioned to produce an Ecological Compliance Statement for the Ashmere Neighbourhood Green Reserved Matters Planning Application. At the time of the application dormouse surveys on site were ongoing and therefore only the below detail was provided –

Dormice – Although the site boundary only included a small area of scrub offering poor species diversity, the scrub was deemed to offer suboptimal dormouse habitat and it was noted that the clearance was in close proximity to dormouse records on site, therefore dormouse tubes were installed along the scrub line in April 2025 to establish if the area could be cleared under a Precautionary Working Method Statement for dormice or whether a licence amendment to Natural England Licence 2017-31542-EPS-MIT-5 would be required.

Following submission Kent County Council make the following request for information -

The Ecology Statement details that the site has potential to support reptiles, dormouse and breeding birds, but no details of the dormouse survey have been submitted because they survey has been ongoing since April. KCC Ecology request that the details dormouse survey be submitted prior to the determination of the application.

The following document details dormouse mitigation work undertaken within the Ashmere Neighbourhood Green parcel. Further information on monitoring and mitigation work can be found in the 2025 dormouse monitoring survey report for 2025 (RT-MME-121456-2025-102).

Mitigation Summary and Results
Following the initial site walkover conducted on April 5th, 2025, by Jacob Kench, Principal Ecological Consultant and Arthur Jones Senior Ecological Consultant, it was established there was a strip of buddleia dominated scrub which was proposed for clearance as part of the Ashmere Neighbourhood Green ground levelling works. An on-site client meeting was undertaken in early May to establish whether the bank levels could be adjusted to accommodate the scrub area in final plans which was not possible. Dormouse tubes were subsequently installed along the scrub line and monitored for dormouse nests on the following dates.

Monitoring Visit	Result
15/05/2025	Nil
26/06/2025	Nil
31/07/2025	Nil
14/08/2025	Nil
02/09/2025	Nil

Table 1: Dormouse monitoring

As no dormice or evidence of dormouse was noted single phase vegetation clearance under a precautionary working method statement began on September 2nd. This involved following the below working methods –

- Supervision from suitably qualified Ecologist;
- Directional clearance starting to the north of the site and working south to retained scrub; and
- Initial clearance with hand tools to be followed by machines to remove root balls following fingertip search.

During the first day of clearance a natural woven dormouse nest was found within bramble scrub by ecologist Ben Huxley ahead of clearance. The nest contained 4 juveniles and no adult. All works ceased at this point until a dormouse licence could be obtained from Natural England for removal of the vegetation.

Conclusion/ Work Status January 2026
Following the discovery of an active dormouse nest during single phase clearance in September clearance works ceased ahead of a dormouse licence application being submitted to Natural England.

Licence Application 2017-31542-EPS-MIT-6 was submitted in November 2025 to cover the scrub clearance within Ashmere Neighborhood Green and additional areas of planned clearance elsewhere on site. Map C121456-E2 Rev I attached at the end of this letter shows the area for clearance to be cleared within Ashmere as area 4A, measuring 838m^2 of scrub.

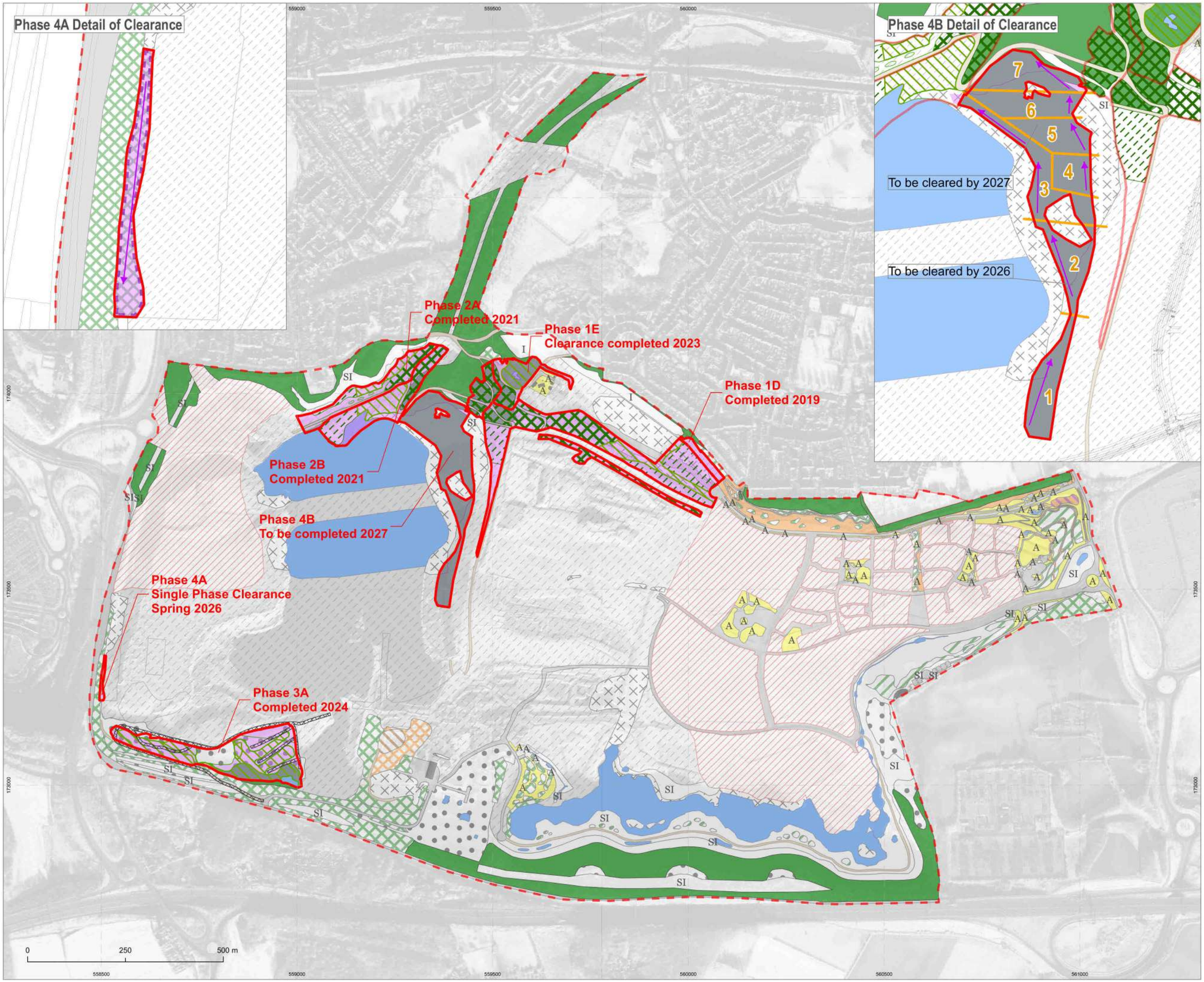
Within the license a proposal has been made for two phase clearance of the remaining scrub to be completed by May 2026.

Yours sincerely,
For and On Behalf of Middlemarch Environmental Ltd.

Jacob Kench
Principal Ecological Consultant

Checked and Approved By

Paul Roebuck MSc MCIEEM
Regional Manager: South



C121456-E2

Legend

- Site boundary
- Application boundary
- 00 Compartment number
- Direction of clearance
- Subcompartment boundary
- High value habitat
- Low value habitat
- Moderate value habitat
- Unsuitable habitat
- One phase vegetation clearance
- Area subject to vegetation clearance
- Indicative proposed haul road layout

Phase 1 habitats

- A Amenity grassland
- Area being developed/bare ground
- Bare ground
- Broad-leaved plantation woodland
- Building
- Calcareous grassland
- Dense scrub
- Ephemeral/short perennial
- Hardstanding
- I Improved grassland
- Introduced shrub
- Marshy grassland
- Neutral grassland
- Other habitat - allotments
- Recently finished development - private gardens
- SI Semi-improved grassland
- Scattered scrub
- Semi-natural broad-leaved woodland
- Standing water
- Marginal vegetation
- Tall ruderal
- Track

N

Project: Eastern Quarry

Drawing: Proposed Site Clearance

Client: Camland

Drawing Number	Revision
C121456-E2	Rev I
Scale @ A3	Date
1:9,000	September 2025
Approved By	Drawn By
JK	KB

MIDDLEMARCH
Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T:01676 525880
E:admin@middlemarch-environmental.com

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CBRE

Henrietta House | Henrietta Place | London | W1G 0NB

Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Ebbsfleet
Kent
DA11 8BD

Planning Application ref. EDC/25/0183

18 December 2025

Dear Sir/ Madam,

ASHMERE NEIGHBOURHOOD GREEN & SOUTH WEST BOUNDARY, EASTERN QUARRY (WHITECLIFFE), WATLING STREET, SWANSCOMBE, KENT

PLANNING APPLICATION FOR RESERVED MATTERS PURSUANT TO CONDITIONS 2 AND 25 OF PLANNING PERMISSION REF EDC/17/0048 DATED 28 MARCH 2018

This covering letter has been prepared on behalf of Eastern Quarry Limited in response to the comments received on Reserved Matters (RM) application ref. EDC/25/0183 in Ashmere. The below response is summarised under the necessary sub-headings.

Applicant Response

Drainage

Kent County Council (KCC) Flood and Water Management issued comments dated 7 November 2025. Ardent Consulting Engineers (ACE) have prepared a response note to these comments, which is enclosed within Appendix A of this covering letter.

The response confirms that the overall impermeable area on-site has dropped to 58%, with the overall runoff going into the western swale being lower than originally envisaged. ACE have prepared a sketch to show the decrease in catchment sizes (173535-ACE-XX-XX-SK-C-0015).

ACE have confirmed that the flooding calculations have been progressed in accordance with the Outline permission requirements. We are of the view that the designs are suitably resilient to accommodate the updated climate change allowances.

Ecology

The requested Dormouse survey data is being collated by the Applicants appointed Ecologist. This will follow in January 2026.

Pumping Station & Noise

The Ashmere NG will accommodate an interim foul water pumping station, which is needed to avoid excessively deep strategic foul water sewers.

Officers queried the 'interim' meaning behind this piece of infrastructure, and the Applicant would like to clarify that 'interim' does not relate to a provisional/ meanwhile use of the pumping station per se; rather, it relates to the pumping

station's role in discharging to the Terminal Foul Pumping Station rather than an off-site facility. This is also known as an '*intermediate*' pumping station however we have used '*interim*' for the purposes of this submission.

Additional details have been shared with regard to the noise of the pumping station however no further consultee comments have been received at the time of writing.

Officers also queried the extent of the pumping station and the impact this will have on the overall 0.4ha requirement for the Neighbourhood Green (NG) (the AMP for Ashmere states that a minimum site area of 0.4ha should be delivered).

Whilst the pumping station would make a small encroachment into the overall 0.4ha figure, it is important to note that the site-wide Landscape & Open Space Strategy (LOSS) states that Neighbourhood Greens should be approximately 0.4ha in size (each), with a minimum size of 0.3ha. Overall, when balanced across the site-wide provision of open space and the additional amendments proposed by the Applicant (see table 1 below), it is felt that this marginal encroachment will not harm the overall function, design and accessibility of the NG.

Landscaping and Design

Several comments have been raised by Officers with regard to Landscaping and Design. The Applicants response to these points is set out within Table 1 below.

Topic	Officer Comment	Applicant Response
NG (Planting Legend)	On the Illustrative Masterplan of the Neighbourhood Green, it is unclear if the darker green solid fill colour near the periphery hedgerows of the Neighbourhood Green has been included within the Legend, and therefore assigned a planting mix/list. If this is missing, it will need to be identified and a short planting palette of suitable structural shrubs added. If this is a graphical error and should be read as the 'semi native groundcover mix', this will need changing, as these species are inappropriate to act as a suitable landscape buffer against the hedgerow. A delineation will need to be made between areas for groundcover and areas for structural shrub planting.	The Applicant has updated the legend to account for the Perimeter planting. Please refer to the submitted landscape pack for details of the species used.
NG (Seating)	Would it be possible to increase the seating in the community social space? Preferably in the form of an additional picnic table or extending the existing as one long picnic table. The latter would be preferable to increase social cohesion. The pergola would also need to be extended to provide shading.	The Applicant has increased the size of the picnic table to 2.3m with wheelchair overhangs.
NG (Pergola Planting)	On the pergola, we like the current proposal and aesthetic nature of the planting to provide shade. However, we're a little concerned as to how this planting will be retained and maintained, therefore potentially leaving residents without shade. Ensuring residents sitting on the tables have shade is the priority, so please could you detail how this planting will take to the pergola and be maintained. Or alternatively, how a different structure might provide shading to this area.	The Applicant has included pergola planting into soft surface in the community garden, more info added to legend in regards to supporting the shade of the pergola.

NG (Gradients)	Full details of the height, slope, and usable gradient of the earth modelled mounts should be provided. Similarly, I'd be happy for this to be conditioned.	Mounding lines changed to dashes to make the level changes clearer in the play area (and indicative heights of mounding added for clarity).
NG (LEAP)	The LEAP does not have a peripheral fence, however, there are a few small, landscaped verges to delineate points of access. It is a shame there are no further landscape interventions – the space does not obviously incorporate any planting as a form of play or interactivity.	Mini (lonicera nitida) hedges added to edges to define play area with natural boundaries.
NG (Specifications)	There is a lack of specification on the communal planters, as well as how the water connection point and electrical connection box will be coordinated. We'd prefer to deal with this matter during application stage, but if not, we're happy to condition.	The Applicant is comfortable with some aspects being conditioned should it still be required following a review of the updated landscape pack. Additional specifications have been added to the planters.
NG (Water Fountain)	A small matter, but residents have requested drinking fountains in EQ. Is there any scope to deliver one here?	The Applicant is unable to provide a water fountain in this location.
NG (Shading)	Members have queried the extent of shading within the NG and whether this could be increased?	The Applicant has amended 2 x MalD and replaced with SorA in the community garden to increase shade, PruD mixed into remaining MalD to provide variation and to match the specs in the landscape strategy. Lastly, the Applicant has added BetPe to grass space on the eastern side of the green aswell as a SorA on the northern most end of the play area (both to increase shade).
NG (Play)	The play equipment provided meets the provisions of the AMP in principle. More generally, is there a strategic approach to the delivery of play/sports equipment for other spaces in Ashmere?	The Applicant will continue to draw on the AMP to deliver the play strategy for Ashmere. Each area has a basic concept for each park that can be reviewed at the RM stage. That being said, the Applicant has included additional stepping stones within the play area to increase the interactivity with the planting.
SWB (Plan Query)	The plans show a large, grey, rectangular shape to the far north of this space, within the redline boundary, between the Fastrack to the north and the SuDS corridor to the south, as shown in the screengrab to the right. This does not feature within the Legend. Details will need to be provided to clarify exactly what this is for, and whether this is existing or proposed, and if the latter, how are details for whatever this is to come forward, if not within this application	The Applicant has updated the key to account for this. The grey area reflects proposed signage for the tunnel connection into Bluewater.

SWB (Seating)	A total of ten benches have been provided throughout this zone. Two of these are picnic tables, positioned near the new LAP-style 'Picnic Area'. The other eight benches are scattered around quite efficiently with several situated in close proximity to the timber jetties, which is welcomed. Would it be possible to provide an additional picnic table to create a cluster of three table and to integrate these tables with the nearby trees to provide natural shade? The seating (benches) shown do not include arm rests, so more accessible options are required.	The Applicant has revised the orchard planting north of the LAP to create a more shaded and integrated seating space (1 picnic table and 1 tree added). The Applicant can confirm that 50% of the seating provided will have backrests and armrests (this also applies to the NG), therefore complying with the requirement to make the seating accessible.
SWB (Play)	It is not clear where the cradle swings are provided in the small area of play equipment.	Officers queried the 'cradle swing' however this is not currently shown within the Define planning pack. This can be reviewed with Officers separately as the comment may have been made in error (or there is an error on a pervious plan).

Additional matters the Applicant would like to provide clarification on are as follows:

- The Applicant acknowledges the concerns with regard to the pumping station and the requirement to ensure that an adequate boundary treatment is provided. As such, and following EDC feedback, the Applicant is proposing to increase the density specification.
- The proposed kerbing and lighting will be addressed at the approval of details stage.

Summary

To summarise, the Applicant has maintained a positive working relationship with EDC throughout the course of this RM application. As set out below, several landscape and design amendments have been made to align with the comments received from Officers. We are of the view that these comments have been sufficiently addressed and therefore, this RM application should now proceed towards a positive determination following the necessary re-consultation being undertaken.

Yours sincerely,

James Dodds
Senior Planner
CBRE Limited on behalf of Eastern Quarry Ltd

Appendix A

Applicant Response to KCC Flood and Water Management comments dated 7 November 2025

ARDENT
CONSULTING ENGINEERS
AN EMPLOYEE OWNED COMPANY

Eastern Quarry, (Ashmere) Phase 4

Response to Kent County council (KCC) as Lead Local Flood Authority (LLFA) Comments on Application No: EDC/25/0183

Our Ref: PM/173535/Letter

10th December 2025

Dear Mr Hoare,

Further to your comments on behalf of Kent County Council (7th November 2025), Ardent Consulting Engineers (ACE) has been instructed to review the comments provided by yourself and provide a response to those relating to the impermeable areas draining from Phase 4 of the site into the Western Swale. We have set your queries out the below, followed by our response.

Kent County Council – Drainage Technical Note Response

Kent County Council as Lead Local Flood Authority have reviewed the Drainage Technical Note by Ardent consulting (Aug 2025) and supporting information, and have the following comments:

The LLFA understands that the Drainage Technical Note (Revision A) covers the entirety of Phase 4, rather than just the areas shown on the Location Plan (DE_229_P10_001–Areas ASNG2 and the Western Swale). Despite this, we acknowledge that sections of Phase 4 collect surface water and discharge it into the Western Swale.

On this basis, we have reviewed the note, particularly Section 3, which details the impermeable areas. Statement 3.12 indicates that the impermeable area percentages now proposed for Phase 4 are lower than those set out in the overarching Patrick Parsons (PP) design. From Tables 3.2 and 3.3, it appears that while the total impermeable area percentage is reduced, this is due to an increase in the overall catchment area, from 3.799 ha in the PP design to 4.21 ha currently. We would therefore seek to better understand the additional area included within the current "Phase 4" boundary compared to the earlier design.

ACE Response

The Patrick Parsons Water Management Plan (WMP) has been approved at the Outline stage, with an extract of the approved document appended to this document for reference.

In Table 1 below, we have shown the proposed developable and impermeable areas for Phase 4 compared to the respective areas agreed in the outline information.

Table 1: Phase 4 Development and Impermeable Areas

Catchment	NET Developable Area from PP WMP (ha)	NET Impermeable Area from PP WMP (ha)	PP WMP Percentage Impermeable (%)	Ardent Phase 4 Measured Developable Areas (ha)*	Ardent Phase 4 Impermeable Areas (ha)	Ardent Percentage Impermeable (%)	Comparison Between Impermeable areas (ha)
AS19	0.612	0.489	80	1.062	0.726	68	+0.237
AS20	0.467	0.373	80	0.485	0.293	60	-0.080
AS21	0.452	0.271	60	0.884	0.502	57	+0.231
AS22	0.550	0.330	60	0.832	0.486	58	+0.156
ASNG2	0.565	0.113	20	0.408	0.082	20	-0.031
AS23	1.718	1.031	60	0.947	0.573	61	-0.458
Total	**4.363**	**2.607**	**60**	**4.618**	**2.663**	**58**	**+0.056**

* Development areas updated to suit current layout and different Fastrack Road alignment

As shown in Table 1, the overall development area (catchment area) has increased, largely as a result of the re-aligned Fastrack road alignment and the Phase 4 layout changing from the outline application. While the development area of the Phase 4 increased, the nominal sitewide development area was not changed and the Phase 4 impermeable area has decreased from outline.

Consistent with other phases in the development, the percentage of impermeable area used in the outline planning calculations were conservative and the measured impermeable area (which are reflective of the current proposals) are lower. Given that the nominal sitewide development area is the same, and the percentage impermeable area has dropped from 60% to 58%, the overall runoff going into the western swale is less than the outline provision.

A sketch (drawing ref. 173535-ACE-XX-XX-SK-C-0015) comparing the catchment extents in the outline application against the proposals will be appended to this letter.

Kent County Council – Drainage Technical Note Response

Additionally, the Drainage Strategy Note prepared by Camland Consulting (TN19 Ashmere P10 N'Hood Green) states that the sewers and swales serving the phases were designed to prevent flooding during a 1 in 30-year event, with any flooding during a 1 in 100-year event (plus a 20% climate change allowance) to be contained within carriageways and directed towards lakes or swales. While this was the approved design in 2019, climate change allowances were revised in 2023. The updated allowances for the site are 45% for the 100-year event and 35% for the 30-year event.

As the overarching approval predates the revised allowances, we would seek advice from EDC Planning to confirm whether it is appropriate to request applying the updated climate change allowances in this instance. Our view is that any development yet to be constructed should aim to meet current standards to ensure resilience against climate change impacts. However, we understand this may not be feasible due to the prior approval and would appreciate confirmation.

Irrespective of whether the climate change allowance can be amended, we note that no supporting modelling has been provided to demonstrate whether above ground flooding is expected to occur. We request that this modelling be provided for clarity.

ACE Response

With regard to the climate change allowances, surface water design calculations have been for Phase 4 and the contributing areas upstream. These were undertaken for the below storms:

- 1 in 1 year storm
- 1 in 30 year storm
- 1 in 100 year storm plus climate change allowance

These calculations will be appended along with this document for reference. A 20% allowance was applied to the rainfall intensity of the 1 in 100 year storm, in line with the outline information. A sensitivity check was completed with a 45% allowance to the 1 in 100 year event. These results show that there is no flooding in the 1 in 1 year, 1 in 30 year storm, and 1 in 100 year +20% storm for all the different networks. There is some minimal flooding in some areas outside Phase 4, however these areas are subject to change, as the layout, levels and drainage runs are not fixed in these areas. The level of flooding is consistent with the approach in previous phases (Phase 1, 2 and 3) of the development. As the future phases progress into detailed design, it is planned that the minimal flooding will be reduced, removed or accommodated within the highway extents. As such the designs are deemed to be in line with the outline information and is suitably resilient to accommodate the updated climate change allowances.

From the above additional information along with the appended information below, we hope this is enough to resolve any areas of concern and clarity on the strategy.

Regards,

Peter Maddock

Engineer

Ardent Consulting Engineers

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Appendices

Head Office: Third Floor, The Hallmark Building, 52-56 Leadenhall Street, London EC3M 5JE | 020 7680 4088
Kent: Suite 10, 40 Churchill Business Square, Kings Hill, West Malling, Kent ME19 4YU | 01732 752155

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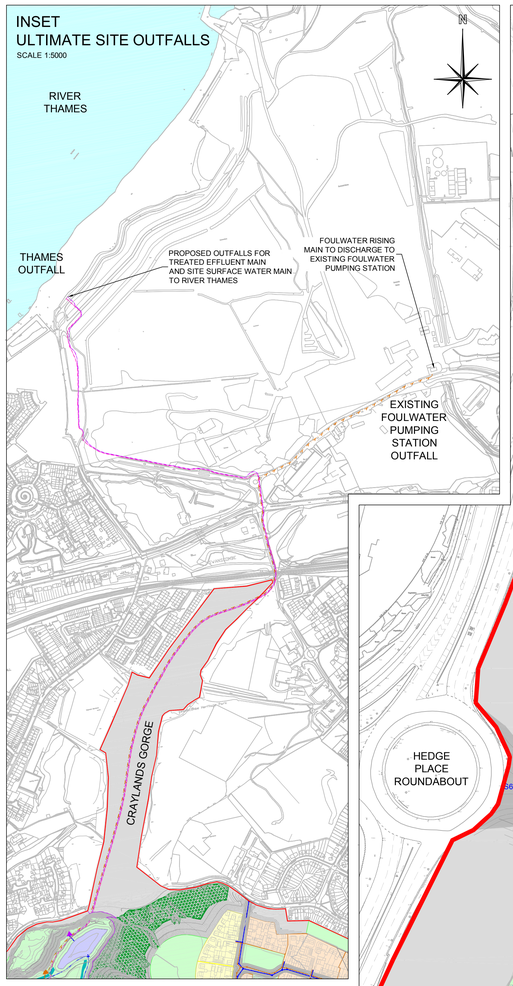
INSET
ULTIMATE SITE OUTFALLS

SCALE 1:5000



NORTHERN LAKE

INFLOW

TOTAL CATCHMENT	GROSS	22.643Ha
	NETT	9.846Ha
+ 106l/s FROM CASTLE HILL LAKE		
+ 217l/s FROM SOUTHERN LAKE		
OUTFLOW (FROM CONTROL PUMPING STATION)		323l/s

LEVELS

DEVELOPMENT THRESHOLD LEVEL	10m
NORMAL WATER LEVEL	8.000m
TOP WATER LEVEL (2 YEAR STORM)	8.143m
TOP WATER LEVEL (30 YEAR STORM)	8.508m
TOP WATER LEVEL (100 YEAR STORM +20%CC)	8.873m
TOP WATER LEVEL (100 YEAR STORM +40%CC)	9.006m

NORTHERN LAKE
CATCHMENT 1
TOTAL CATCHMENT
GROSS 6.383Ha
NETT 2.531Ha

NORTHERN LAKE
CATCHMENT 2
TOTAL CATCHMENT
GROSS 14.148Ha
NETT 6.569Ha

FOR CONTINUATION SEE INSET LEFT

FOR CONTINUATION SEE DRAWING No.B18075/153

FOR CONTINUATION SEE DRAWING No.B18075/152

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DRAINAGE NOTES:

2.1 THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE WATER MANAGEMENT PLAN.
2.2 THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAINAGE STRATEGY DRAWINGS Nos. B18075/151 TO 154.
2.3 FOR DETAILS OF TO WHICH PIPE CATCHMENTS DRAIN REFER TO CATCHMENT SCHEDULE DRAWING No.B18075/155.
2.4 WATER WITHIN THE PONDS SHALL BE RECIRCULATED TO THE HEAD OF SWALES TO MAINTAIN A FLOW WITHIN THE SWALES AND TO PROVIDE ADDITIONAL TREATMENT. FILTER STRIPS SHALL BE PROVIDED WHEREVER ROADS RUN NEXT TO SWALES. SWALES SHALL BE INTERSPERSED WITH PONDS, CASCADES, WETLAND AREAS AND MARGINAL PLANTING OF REEDS ETC. ADDITIONAL SUDS FEATURES MAY BE ADDED WITHIN DEVELOPMENT PARCELS AS NECESSARY TO PROVIDE THE REQUISITE TREATMENT TO SURFACE WATER RUN OFF IN ACCORDANCE WITH THE SUDS MANUAL CIRIA C753.
2.5 DEVELOPMENT DRAINAGE SHALL (WHERE REQUIRED) BE DESIGNED AND ADOPTED UNDER SECTION 104 OF THE WATER INDUSTRY ACT 1991 AND SHALL COMPLY WITH DESIGN GUIDANCE LAID DOWN IN THE UK WATER GUIDE 'SEWERS FOR ADOPTION 6TH EDITION' (OR AS REVISED). SUCH SEWERS SHALL BE ADOPTED BY THE REGIONAL WATER COMPANY (INDEPENDENT WATER NETWORKS LIMITED - IWNL) WHERE REQUIRED.
2.6 ALL ADOPTABLE DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH 'SEWERS FOR ADOPTION' 6th EDITION, THE "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY' 6TH EDITION AND ANY SUBSEQUENT AMENDMENTS TO THESE DOCUMENTS.
2.7 NON-ADOPTED DRAINAGE (INCLUDING SWALES AND PONDS) SHALL REMAIN THE RESPONSIBILITY OF THE DEVELOPER/SITE OWNER UNLESS OTHERWISE TRANSFERRED TO AN OFFICIAL BODY BY SEPARATE AGREEMENT.
2.8 MANHOLE CHAMBER SIZES SHALL COMPLY WITH THE REQUIREMENTS OF 'SEWERS FOR ADOPTION 6th EDITION' (AND ANY SUBSEQUENT ADDENDUM INFORMATION PROVIDED BY WINL, PART H OF THE BUILDING REGULATIONS OR THE DESIGN MANUAL FOR ROADS AND BRIDGES, WHICHEVER IS THE PREFERENCE OF THE ADOPTING AUTHORITY.
2.9 HIGHWAY DRAINS SHALL BE ADOPTED UNDER SECTION 38 OF THE HIGHWAYS ACT 1980.
2.10 ALL DRAINAGE LAID WITHIN THE HIGHWAY SHALL HAVE A MINIMUM COVER OF 1.2m MEASURED FROM THE TOP OF THE PIPE BARREL TO THE FINISHED ROAD SURFACE.
2.11 ALL DRAINAGE UNDER PROPOSED ADOPTABLE ROADS AND FOOTWAYS SHALL BE A MINIMUM 150mm DIAMETER.
2.12 THE DRAINAGE LAYOUT SHOWN IS BASED ON PROVING LAYOUTS AND IS THEREFORE INDICATIVE.
2.13 STILLING BASINS FORMED IN GABION BASKETS WITH REEDS UPSTREAM, TO ALLOW ANY DESILTING OF FLOW AND TO RETAIN ANY FIRST FLUSH POLLUTANTS SHALL BE PROVIDED AT ALL HEADWALLS INTO PONDS.
2.14 ATTENUATION PONDS/BASINS HAVE BEEN DESIGNED ASSUMING NO INFILTRATION TO GROUND.
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KEY: CATCHMENTS

- HIGHWAY CORRIDOR (75% IMPERMEABLE)
- LOW DENSITY HOUSING (40% IMPERMEABLE) (SEE NOTE 2.3)
- MEDIUM DENSITY HOUSING (60% IMPERMEABLE) (SEE NOTE 2.3)
- HIGH DENSITY HOUSING (80% IMPERMEABLE) (SEE NOTE 2.3)
- SCHOOLS WITH (80% IMPERMEABLE) (SEE NOTE 2.3)
- MIXED USE DEVELOPMENT WITH CATCHMENT REF (90% IMPERMEABLE)
- GREEN AREAS (20% IMPERMEABLE)
- LAKES (100% IMPERMEABLE)
- AREA NOT DIRECTLY CONTRIBUTING TO NETWORK
- AL30 CATCHMENT REF (SEE NOTE 2.3)

KEY: GENERAL

- S3.000 — S3.000 SURFACE WATER SEWER AND CHAMBER WITH REFERENCES
- F3.000 — F3.000 FOUL WATER SEWER AND CHAMBER WITH REFERENCES
- SWALE (SEE NOTE 2.4)
- CASTLE HILL LAKE MAIN AND PUMPING STATION
- SOUTH LAKE MAIN AND PUMPING STATION
- NORTH LAKE MAIN AND PUMPING STATION
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- EXTENT OF CATCHMENT TO NORTHERN LAKE
- SW OUTFALL HEADWALL TO LAKE (SEE NOTE 2.13)

Rev	Amendments	Date	By
P1	INITIAL ISSUE.	18.12.18	RDT

Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy

40 St. Paul's Square
Birmingham
B3 1FQ
United Kingdom

T. +44 (0)121 237 5130
E. info@patrickparsons.co.uk
W. www.patrickparsons.co.uk

Client
EASTERN QUARRY LTD.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
MAIN INFRASTRUCTURE

Drawing
DRAINAGE STRATEGY
SHEET 1

Scales 1:1,000/1:5,000 At original size A0

Drawn RDT Checked DCT
Date 18.12.18

Status PRELIMINARY

Drawing No. B18075/151 Rev. P1

T:\BJB75 - Eastern Quarry\Infrastructure 1 - PD Z12\Acad\PC\mdx151 - DH RNDWAY STRATEGY PLANS.dwg, 18/12/2018 15:10:45, jeffreyroy, File:A0 c PRINT.pc3

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Rev.	Amendments	Date	By
P1	INITIAL ISSUE.	18.12.18	RDT

Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy

40 St. Paul's Square
Birmingham
B3 1FQ
United Kingdom

T. +44 (0)121 237 5130
E. info@patrickparsons.co.uk
W. www.patrickparsons.co.uk

Client
EASTERN QUARRY LTD.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
MAIN INFRASTRUCTURE

Drawing
DRAINAGE STRATEGY
SHEET 2

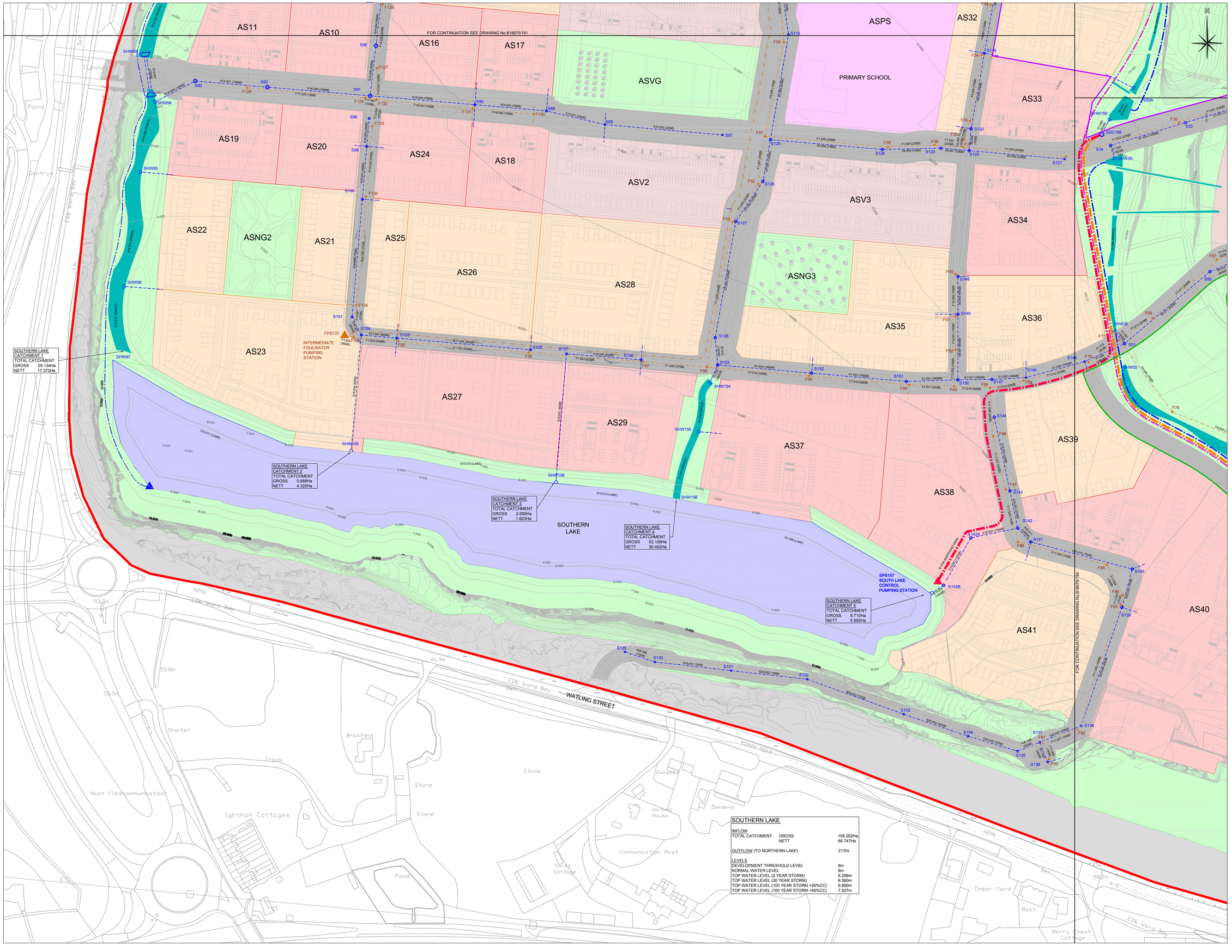
Scales 1:1000 At original size A0

Drawn RDT Checked DCT
Date 18.12.18

Status PRELIMINARY

Drawing No. B18075/152 Rev. P1

T:\B1875 - Whitecliff\02 Infrastructure\4 - PD Z\02 Acad\PP\Cells\ZD - DH SWAMAB CRAYBO Rpt60.dwg, 18/12/2018 10:03:26, pdfFactory Pro 4.0, PRINT.pc3



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Rev.	Amendments	Date	By
P1	INITIAL ISSUE.	18.12.18	RDT

Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy

40 St. Paul's Square
Birmingham
B3 1FQ
United Kingdom

T. +44 (0)121 237 5130
E. info@patrickparsons.co.uk
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Client
EASTERN QUARRY LTD.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
MAIN INFRASTRUCTURE

Drawing
DRAINAGE STRATEGY
SHEET 3

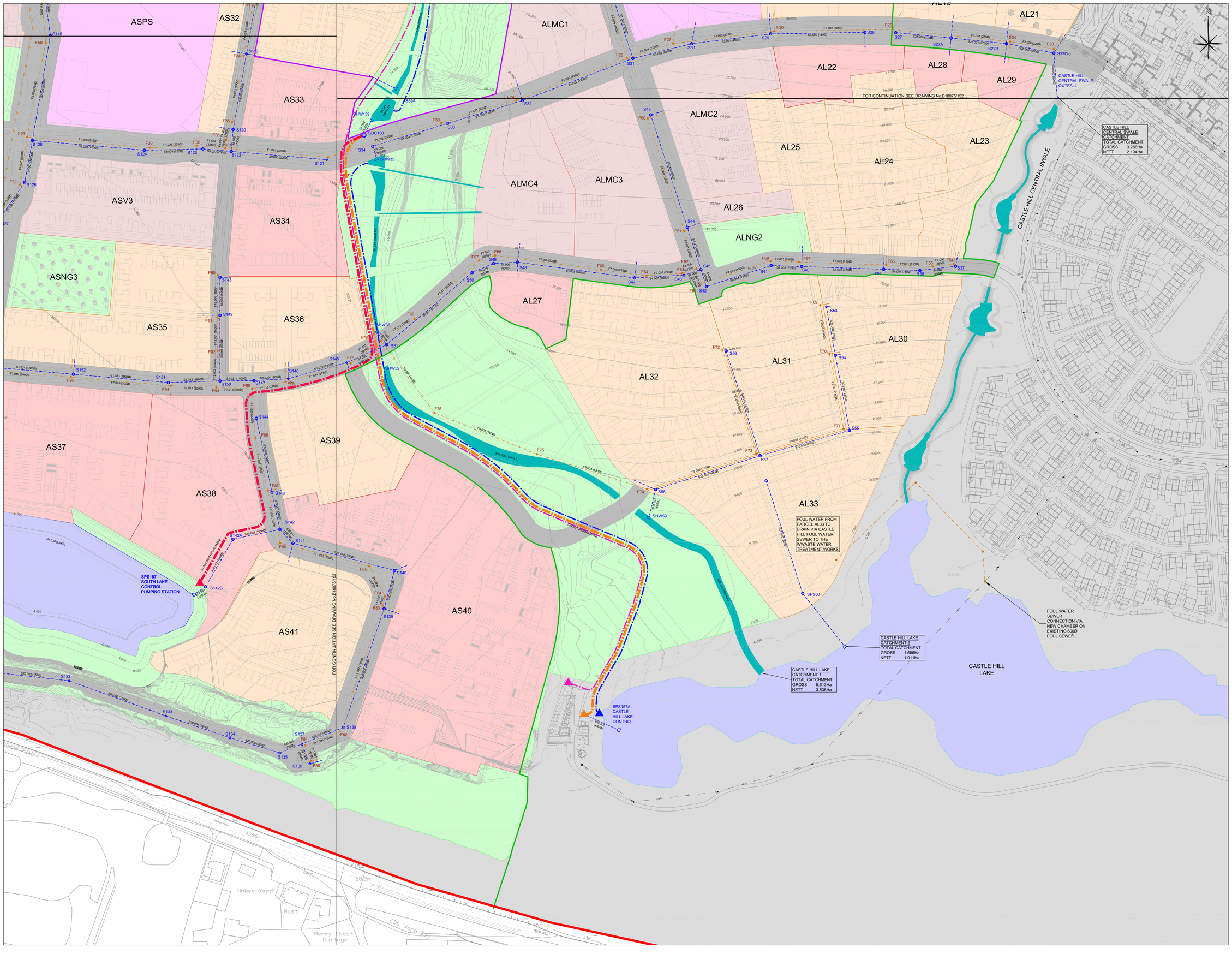
Scales 1:1000 At original size A0

Drawn RDT Checked DCT
Date 18.12.18

Status PRELIMINARY

Drawing No. B18075/153 Rev. P1

T:\B1875 - Hallam\02 Infrastructure\1 - PC Z\02 Aut\PP\Civil\151 - SX DRAINAGE STRATEGY PLAN.dwg, 18/12/2018 2:59:26, pdfFactory Pro v4.1 PRINT.pc3



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Rev.	Amendments	Date	By
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Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy

40 St. Paul's Square
Birmingham
B3 1FQ
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Client
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Project
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MAIN INFRASTRUCTURE

Drawing
DRAINAGE STRATEGY
SHEET 4

Scales 1:1000 At original size A0

Drawn RDT Checked DCT
Date 18.12.18

Status PRELIMINARY

Drawing No. B18075/154 Rev. P1

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PIPE CATCHMENTS

PIPE NUMBER	CHAMBER REFERENCE	PARCEL REF	PERMEABILITY	CONSTRUCTING AREAS (HA)			
				GROSS	NETT	TOTAL PIPE CATCHMENT	
						GROSS	NETT
1.000	CP1	HIGHWAY	75	0.160	0.120	0.160	0.120
1.001	CP2	HIGHWAY	75	0.039	0.029		
		AL02	60	0.313	0.188		
		AL01	60	0.327	0.196		
		LANDSCAPING	20	0.394	0.079	1.233	0.612
1.002	CP3	HIGHWAY	75	0.143	0.107	1.376	0.719
1.003	CP4	HIGHWAY	75	0.095	0.071	1.471	0.790
		AL04	60	0.251	0.150		
		AL03	60	0.713	0.428		
		LANDSCAPING	20	0.420	0.084	2.855	1.452
1.004	CP5	HIGHWAY	75	0.096	0.072	2.951	1.524
1.005	CP6	HIGHWAY	75	0.105	0.078	3.056	1.602
		AL06	60	0.347	0.208		
		AL05	60	0.977	0.586		
		LANDSCAPING	20	0.312	0.062	4.692	2.458
1.006	CP7	HIGHWAY	75	0.026	0.020	4.718	2.478
1.007	CP8	HIGHWAY	75	0.049	0.037		
		AL07	60	0.534	0.321		
		LANDSCAPING	20	0.397	0.079	5.698	2.915
1.008	CP9	HIGHWAY	75	0.137	0.103	5.835	3.018
2.000	CP10	HIGHWAY	75	0.105	0.079	0.105	0.079
2.001	CP11	AL08	40	0.810	0.324		
		HIGHWAY	75	0.094	0.070	1.009	0.473
2.002	CP12		100	0.000	0.000	1.009	0.473
1.009	CP13	HIGHWAY	75	0.059	0.044	6.903	3.535
1.010	CP14	HIGHWAY	75	0.061	0.046	6.964	3.581
		AL10	60	0.237	0.142		
		AL09	40	0.814	0.326		
		LANDSCAPING	20	2.015	0.403	10.030	4.452
1.011	CP15	HIGHWAY	75	0.095	0.071	10.125	4.523
1.012	CP16	HIGHWAY	75	0.020	0.015		
		AL12	60	0.316	0.190	10.461	4.728
1.013	CP17	HIGHWAY	75	0.112	0.084		
		AL11	40	0.546	0.219	11.119	5.031
1.014	CP18	HIGHWAY	75	0.175	0.132		
		AL14	60	0.283	0.170		
		AL13	40	0.373	0.149	11.950	5.482
1.015	CP19	HIGHWAY	75	0.023	0.017		
		AL15	60	0.264	0.159	12.237	5.658
1.016	CP20	HIGHWAY	75	0.038	0.029		
		AL16	60	0.135	0.081	12.410	5.768
1.017	CP21	HIGHWAY	75	0.045	0.033	12.455	5.801
1.018	CP22	HIGHWAY	75	0.042	0.031		
		AL17	60	0.663	0.398	13.160	6.230
1.019	CP23	HIGHWAY	75	0.066	0.050	13.226	6.280
1.020	CP24	HIGHWAY	75	0.057	0.043	13.283	6.323
1.021	CP25	HIGHWAY	75	0.089	0.067		
		ALSC	80	4.509	3.607		
		ALPF	20	6.705	1.341	24.586	11.338
3.000	CP28	FASTRACK	70	0.238	0.166		
		AL22	80	0.393	0.315		
		AL18	80	0.342	0.274	0.973	0.755
3.001	CP29	FASTRACK	70	0.160	0.112	1.133	0.867
3.002	CP30	FASTRACK	70	0.123	0.086	1.256	0.953
1.022	CP31	FASTRACK	70	0.238	0.166		
		ALMC1	90	0.644	0.579	26.724	13.036
1.023	CP32	FASTRACK	70	0.157	0.110	26.881	13.146
1.024	CP33	FASTRACK	70	0.158	0.110	27.039	13.256
1.025	CP34		100	0.000	0.000	27.039	13.256
1.026	HW35	LANDSCAPING	20	1.450	0.290	28.489	13.546
1.027	HW36		100	0.000	0.000	28.489	13.546
4.000	CP37	HIGHWAY	75	0.088	0.066		
		AL23	60	0.787	0.472	0.875	0.538
4.001	CP38	HIGHWAY	75	0.051	0.038	0.926	0.576
4.002	CP39	HIGHWAY	75	0.125	0.094		
		AL24	60	1.119	0.671	2.170	1.341
4.003	CP40	HIGHWAY	75	0.051	0.038		
		AL25	60	0.694	0.416		
		LANDSCAPING	20	0.285	0.057	3.200	1.852
4.004	CP41	HIGHWAY	75	0.112	0.084	3.312	1.936
4.005	CP42		100	0.000	0.000	3.312	1.936
5.000	CP43	HIGHWAY	75	0.336	0.252		
		ALMC2	90	0.983	0.885	1.319	1.137
5.001	CP44	HIGHWAY	75	0.134	0.101		
		AL26	60	0.174	0.105	1.627	1.343
4.006	CP45		100	0.000	0.000	4.939	3.279
4.007	CP46	HIGHWAY	75	0.084	0.063	5.023	3.342
4.008	CP47	HIGHWAY	75	0.186	0.139		
		ALMC3	90	1.125	1.012	6.334	4.493
4.009	CP48	HIGHWAY	75	0.071	0.053		
		AL27	80	0.319	0.255		
		ALMC4	90	0.824	0.742	7.548	5.543
4.010	CP49	HIGHWAY	75	0.044	0.033	7.592	5.576
4.011	CP50	HIGHWAY	75	0.194	0.146	7.786	5.722
1.028	CP51	-	100	0.000	0.000	36.275	19.268
1.029	CP145	HIGHWAY	75	0.139	0.104		
		HIGHWAY	75	0.474	0.355	36.888	19.727
1.030	CP146	HIGHWAY	75	0.054	0.041		
		AS36	60	0.826	0.495	37.768	20.263
1.031	CP147	HIGHWAY	75	0.053	0.040	37.821	20.303
6.000	CP148	HIGHWAY	75	0.191	0.143		
		AS34	80	0.847	0.677	1.038	0.820
6.001	CP149	HIGHWAY	75	0.074	0.055		
		AS35	60	1.300	0.780	2.412	1.655
1.032	CP150	HIGHWAY	75	0.081	0.061	40.314	22.019
1.033	CP151	HIGHWAY	75	0.151	0.113	40.465	22.132
1.034	CP152	HIGHWAY	75	0.116	0.087	40.581	22.219

PIPE NUMBER	CHAMBER REFERENCE	PARCEL REF	PERMEABILITY	CONSTRUCTING AREAS (HA)			
				GROSS	NETT	TOTAL PIPE CATCHMENT	
						GROSS	NETT
7.000	CP109	HIGHWAY	75	0.223	0.167	0.223	0.167
7.001	CP110	HIGHWAY	75	0.064	0.048	0.287	0.215
7.002	CP111	GREEN LUNG	60	0.069	0.042	0.356	0.257
7.003	CP112	GREEN LUNG	60	0.063	0.038		
		GREEN LUNG	60	0.125	0.075	0.544	0.370
7.004	CP113	GREEN LUNG	60	0.240	0.144		
		AS30	60	0.745	0.447		
		AS31	60	1.120	0.672	2.649	1.633
7.005	CP114	GREEN LUNG	60	0.171	0.103	2.820	1.736
7.006	CP115	GREEN LUNG	60	0.230	0.138		
		PRIMARY SCHOOL	80	2.116	1.693	5.166	3.567
8.000	CP116	HIGHWAY	75	0.136	0.102	0.136	0.102
8.001	CP116A	HIGHWAY	75	0.106	0.079	0.242	0.181
8.002	CP117	-	100	0.000	0.000	0.242	0.181
8.003	CP117A	-	100	0.000	0.000	0.242	0.181
8.004	CP118	HIGHWAY	75	0.229	0.172		
		AS32	60	0.372	0.223	0.843	0.576
8.005	CP119	HIGHWAY	75	0.104	0.078		
		AS33	80	0.592	0.473	1.539	1.127
8.006	CP120	-	100	0.000	0.000	1.539	1.127
9.000	CP121	FASTRACK	70	0.274	0.192	0.274	0.192
8.007	CP122	FASTRACK	70	0.078	0.055	1.891	1.374
8.008	CP123	FASTRACK	70	0.128	0.090	2.019	1.464
8.009	CP124	FASTRACK	70	0.262	0.184		
		ASV3	90	1.077	0.969	3.358	2.617
7.007	CP125	GREEN LUNG	60	0.108	0.065	8.632	6.249
7.008	CP126	GREEN LUNG	60	0.061	0.037	8.693	6.286
7.009	CP127	GREEN LUNG	60	0.293	0.176		
		ASNG3	20	0.539	0.108	9.525	6.570
7.010	CP128	GREEN LUNG	60	0.145	0.087	9.670	6.657
1.035	CP153	-	100	0.000	0.000	50.251	28.876
1.036	HW154	SWALE	100	0.247	0.247	50.498	29.123
1.037	HW155	AS37	80	1.661	1.329	52.159	30.452
10.000	CP61	HIGHWAY	75	0.104	0.078	0.104	0.078
10.001	CP62	-	100	0.000	0.000	0.104	0.078
10.002	HW63	AS06	80	0.317	0.254		
		AS07	60	1.641	0.985		
		LANDSCAPING	20	0.431	0.086	2.493	1.403
11.000	CP64	HIGHWAY	75	0.112	0.084		
		AS01	80	0.919	0.735	1.031	0.819
11.001	CP65	HIGHWAY	75	0.029	0.022	1.060	0.841
11.002	CP66	HIGHWAY	75	0.148	0.111		
		LANDSCAPING	20	0.079	0.016	1.287	0.968
12.000	CP67	LANDSCAPING	20	0.267	0.053		
		HIGHWAY	75	0.322	0.241		
		AS02	80	1.022	0.818	1.611	1.112
13.000	CP68	HIGHWAY	75	0.399	0.300		
		AS03	80	1.423	1.139	1.822	1.439
11.003	CP69	HIGHWAY	75	0.187	0.140	4.907	3.659
11.004	CP70	AS04	60	1.470	0.882	6.377	4.541
11.005	CP71	-	100	0.000	0.000	6.377	4.541
11.006	CP72	HIGHWAY	75	0.022	0.017	6.399	4.558
11.007	CP73	-	100	0.000	0.000	6.399	4.558
11.008	CP74		100	0.000	0.000	6.399	4.558
11.009	CP75	AS05	60	0.726	0.435	7.125	4.993
10.003	HW76	LANDSCAPING	20	0.389	0.078	10.007	6.474
10.004	HW77	AS08	60	0.815	0.489		
		LANDSCAPING	20	0.216	0.043	11.038	7.006
10.005	HW78	AS09	60	0.798	0.479		
		LANDSCAPING	20	0.282	0.056	12.118	7.541
10.006	HW79	AS11	80	0.523	0.418		
		LANDSCAPING	20	0.467	0.093		
		AS10	80	0.469	0.375	13.577	8.427
10.007	HW80	-	100	0.000	0.000	13.577	8.427
14.000	CP81	HIGHWAY	75	0.173	0.130		
		AS13	60	1.037	0.622		
		AS12	60	1.499	0.899		
		ASNG1	20	0.564	0.113	3.273	1.764
14.001	CP82	AS14	60	1.031	0.619	4.304	2.383
14.002	CP83	HIGHWAY	75	0.048	0.036	4.352	2.419
14.003	CP84	HIGHWAY	75	0.017	0.013		
		HIGHWAY	75	0.028	0.021		
		AS15	60	0.786	0.472	5.183	2.925
14.004	CP85	HIGHWAY	75	0.059	0.044		
		AS16	80	0.525	0.420	5.767	3.389
14.005	CP86	HIGHWAY	75	0.043	0.032	5.810	3.421
15.000	CP87	FASTRACK	70	0.340	0.238	0.340	0.238
15.001	CP88	AS17	80	0.443	0.355		
		ASVG	20	1.054	0.211		
		FASTRACK	70	0.129	0.091	1.966	0.895
15.002	CP89	ASV1	90	1.185	1.066		
		FASTRACK	70	0.147	0.103	3.298	2.064
15.003	CP90	FASTRACK	70	0.290	0.203	3.588	2.267
14.006	CP91	FASTRACK	70	0.230	0.161	9.628	5.849
14.007	CP92	FASTRACK	70	0.353	0.247	9.981	6.096
14.008	CP93	-	100	0.000	0.000	9.981	6.096
10.008	HW94	LANDSCAPING	20	0.347	0.069	23.905	14.592
10.009	HW95	AS19	80	0.612	0.489		
		AS20	80	0.467	0.373		
		AS22	60	0.550	0.330		
		AS21	60	0.452	0.271		
		LANDSCAPING	20	0.516	0.103		
		ASNG2	20	0.565	0.113	27.067	16.271
10.010	HW96	AS23	60	1.718	1.031		
		LANDSCAPING	20	0.349	0.070	29.134	17.372
10.011	HW97	LANDSCAPING	20	0.944	0.189		
		LANDSCAPING	20	0.181	0.036		
		SOUTH LAKE	100	1.462	1.462	31.721	19.059
16.000	CP98	HIGHWAY	75	0.044	0.033	0.044	0.033
16.001	CP99	HIGHWAY	75	0.221	0.166		
		AS24	80	0.563	0.451	0.828	0.650
16.002	CP100	AS25	60	0.331	0.199		
		AS18	80	0.473	0.379		
		ASV2	90	1.075	0.967	2.707	2.195
16.003	CP101	HIGHWAY	75	0.029	0.022	2.736	2.217
17.000	CP102	HIGHWAY	75	0.216	0.162		
		AS26	60	1.230	0.738	1.446	0.900
17.001	CP103	HIGHWAY	75	0.037	0.028	1.483	0.928
16.004	CP104	AS27	80	1.469	1.175	5.688	4.320
10.012	HW105	LANDSCAPING	20	1.296	0.259		
		LANDSCAPING	20	0.393	0.079		
		SOUTH LAKE	100	1.916	1.916	41.014	25.633
18.000	CP106	HIGHWAY	75	0.176	0.132		
		AS28	60	1.604	0.963	1.780	1.095
18.001	CP107	AS29	80	0.910	0.728	2.690	1.823
10.013	HW108	-	100	0.000	0.000	43.704	27.456
1.038	HW156	AS38	80	1.481	1.185		
		LANDSCAPING	20	1.458	0.292		
		SOUTH LAKE	100	1.770	1.770	100.572	61.155

PIPE NUMBER	CHAMBER REFERENCE	PARCEL REF	PERMEABILITY	CONSTRUCTING AREAS (HA)			
				GROSS	NETT	TOTAL PIPE CATCHMENT	
						GROSS	NETT
19.000	S144	HIGHWAY	75	0.041	0.031	0.041	0.031
19.001	S143	HIGHWAY	75	0.128	0.096		
		AS39	60	0.953	0.572	1.122	0.699
20.000	S129	HIGHWAY	75	0.081	0.060	0.081	0.060
20.001	S130	HIGHWAY	75	0.165	0.124		
		LANDSCAPING	20	0.016	0.003	0.262	0.187
20.002	S131	LANDSCAPING	20	0.036	0.007	0.298	0.194
20.003	S132	HIGHWAY	75	0.106	0.080		
		LANDSCAPING	20	0.047	0.009	0.451	0.283
20.004	S133	HIGHWAY	75	0.074	0.056		
		LANDSCAPING	20	0.064	0.013	0.589	0.352
20.005	S134	HIGHWAY	75	0.059	0.044		
		LANDSCAPING	20	0.066	0.013	0.714	0.409
20.006	S135	HIGHWAY	75	0.071	0.053		
		LANDSCAPING	20	0.061	0.012	0.846	0.474
21.000	S136	LANDSCAPING	20	1.073	0.215	1.073	0.215
20.007	S137	HIGHWAY	75	0.054	0.040	1.973	0.729
20.008	S138	HIGHWAY	75	0.210	0.158	2.183	0.887
20.009	S139	HIGHWAY	75	0.111	0.083		
		AS40	80	3.550	2.840	5.844	3.810
20.010	S140	HIGHWAY	75	0.134	0.100	5.978	3.910
20.011	S141	HIGHWAY	75	0.051	0.039		
		AS41	60	1.501	0.901	7.530	4.850
19.002	S142	HIGHWAY	75	0.058	0.043	8.710	5.592
19.003	S142A	-	100	0.000	0.000	8.710	5.592
19.004	S142B	-	100	0.000	0.000	8.710	5.592
1.039	PS157	-	100	0.000	0.000	109.282	66.747
22.000	LAKE	-	100	0.000	0.000	0.000	0.000
22.001	PS157A	-	100	0.000	0.000	106l/s	106l/s
1.040	DC158	-	100	0.000	0.000	0.000	0.000
1.041	HW159	AS42	60	1.229	0.737		
		LANDSCAPING	20	1.237	0.247	2.466	0.984
1.042	59A	-	100	0.000	0.000	2.466	0.984
1.043	HW160	AS43	60	1.476	0.886		
		LANDSCAPING	20	0.905	0.181	4.847	2.051
1.044	HW161	AS44	60	1.545	0.927		
		LANDSCAPING	20	0.425	0.085	6.817	3.063
1.045	HW162	LANDSCAPING	20	0.649	0.130	7.466	3.193
1.046	62A	-	100	0.000	0.000	7.466	3.193
1.047	HW163	AS45	60	0.953	0.572		
		LANDSCAPING	20	0.856	0.171	9.275	3.936
1.048	63A	-	100	0.000	0.000	9.275	3.936
1.049	HW164	-	100	0.000	0.000	9.275	3.936
1.050	HW165	AS46	60	1.874	1.124		
		AS47	60	0.651	0.391		
		AS48	60	1.618	0.971		
		ASNG4	20	0.199	0.040		
		LANDSCAPING	20	0.531	0.106	14.148	6.568
1.051	HW165A	-	100	0.000	0.000	14.148	6.568
1.052	HW166	LANDSCAPING	20	1.706	0.341		
		NORTH LAKE	100	0.406	0.406	16.260	7.315
23.000	S167	HIGHWAY	75	0.058	0.043	0.058	0.043
23.001	S168	HIGHWAY	75	0.023	0.017	0.081	0.060
23.002	S169	HIGHWAY	75	0.055	0.041	0.136	0.101
23.003	S170	-	100	0.000	0.000	0.136	0.101
23.004	HW171	LANDSCAPING	20	0.874	0.175	1.010	0.276
23.005	HW172	AS30	60	0.610	0.366		
		AS49	60	1.412	0.847		
		LANDSCAPING	20	0.260	0.052	3.292	1.541
23.006	HW173	LANDSCAPING	20	0.205	0.041	3.497	1.582
23.007	HW174	AS50	60	0.201	0.121		
		AS51	60	0.731	0.438		
		LANDSCAPING	20	1.222	0.244		
		GREEN LUNG	20	0.732	0.146	6.383	2.531
23.008	HW175	-	100	0.000	0.000	6.383	2.531
1.052	HW176	-	100	0.000	0.000	131.925	76.593
1.053	PS177	-	100	0.000	0.000	131.925	76.593

PIPE NUMBER	CHAMBER REFERENCE	PARCEL REF	PERMEABILITY	CONSTRUCTING AREAS (HA)			
				GROSS	NETT	TOTAL PIPE CATCHMENT	
						GROSS	NETT
24.000	HW52	LANDSCAPING	20	2.237	0.447	2.237	0.447
25.000	CP53	AL30	60	1.203	0.722	3.440	0.722
25.001	CP54	-	100	0.000	0.000	3.440	0.722
25.002	CP55		100	0.000	0.000	3.440	0.722
26.000	CP56	AL31	60	1.212	0.727	4.652	0.727
25.003	CP57	-	100	0.000	0.000	4.652	1.449
25.004	CP58	AL32	60	2.118	1.271	6.770	2.720
24.001	HW59	LANDSCAPING	20	1.843	0.369	8.613	3.536
27.000	PS60	AL33	60	1.686	1.011	10.299	1.011

PARCEL DETAILS

ASHMERE

PARCEL REF	AREA (m^2)	NO. OF PROPERTIES		
		HOUSES	APARTMENTS	TOTAL
AS01	9,186	10	66	76
AS02	10,222		115	115
AS03	14,233	61		61
AS04	14,703	59	17	76
AS05	7,258	30		30
AS06	3,169		52	52
AS07	16,413	66		66
AS08	8,152	32		32
AS09	7,975	32		32
AS10	4,686	23		23
AS11	5,226	6	70	76
AS12	14,990	68		68
AS13	10,409	41		41
AS14	10,311	43		43
AS15	7,861	35		35
AS16	5,249	26		26
AS17	4,431	6	60	66
AS18	4,734	12	47	59
AS19	6,118	9	74	83
AS20	4,668	23		23
AS21	5,495	22		22
AS22	4,522	18		18
AS23	17,098	59		59
AS24	5,632	26		26
AS25	3,321	15		15
AS26	12,295	56		56
AS27	14,691	64		64
AS28	16,043	74		74
AS29	9,104	12	56	68
AS30	7,452	29	22	51
AS31	11,211	53		53
AS32	3,716	20		20
AS33	5,918	11	61	72
AS34	8,447	17	57	74
AS35	12,996	65		65
AS36	8,346	25	13	38
AS37	16,613	26	56	82
AS38	14,812	52	13	65
AS39	9,188	37		37
AS41	15,014	49		49
AS42	12,287	47		47
AS43	14,761	59		59
AS44	15,446	62		62
AS45	9,527	31		31
AS46	5,843	29		29
AS46	18,738	80	13	93
AS47	6,510	30		30
AS48	16,185	59		59
AS49	14,116	53		53
AS50	2,016		25	25
AS51	7,263	28		28

ALKERDEN

PARCEL REF	AREA (Ha)	NO. OF PROPERTIES		
		HOUSES	APARTMENTS	TOTAL
AL01	0.327	12		12
AL02	0.313	11		11
AL03	0.713	22		22
AL04	0.251	8		8
AL05	0.977	38		38
AL06	0.347	13		13
AL07	0.534	16		16
AL08	0.810	28		28
AL09	0.814	23		23
AL10	0.237	11		11
AL11	0.546	18		18
AL12	0.316	15		15
AL13	0.373	14		14
AL14	0.283	13		13
AL15	0.264	7		7
AL16	0.135	6		6
AL17	0.663	26		26
AL18	0.342		44	44
AL19	0.281		35	35
AL20	1.952	66		66
AL21	0.207		26	26
AL22	0.393		51	51
AL23	0.787	30		30
AL24	1.119	48		48
AL25	0.694	31		31
AL26	0.174	14		14
AL27	0.319		41	41
AL28	0.156		20	20
AL29	0.250		32	32
AL30	1.203	50		50
AL31	1.212	53		53
AL32	2.118	81		81
AL33	1.686	55		55
ALMC1	0.644			0
ALMC2	0.983			0
ALMC3	1.125			0
ALMC4	0.824			0
ALPF	6.705			0
ALSC	4.509			0
ALNG1	0.397			0
ALNG2	0.285			0

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P1	INITIAL ISSUE.	18.12.18 RDT
Rev.	Amendments	Date By

Revisions

PATRICK PARSONS
Built Environment | Engineering | Consultancy

40 St. Paul's Square
Birmingham
B3 1FQ
United Kingdom

T. +44 (0)121 237 5130
E. info@patrickparsons.co.uk
W. www.patrickparsons.co.uk

Client
EASTERN QUARRY LTD.

Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
MAIN INFRASTRUCTURE

Drawing
CATCHMENT SCHEDULES

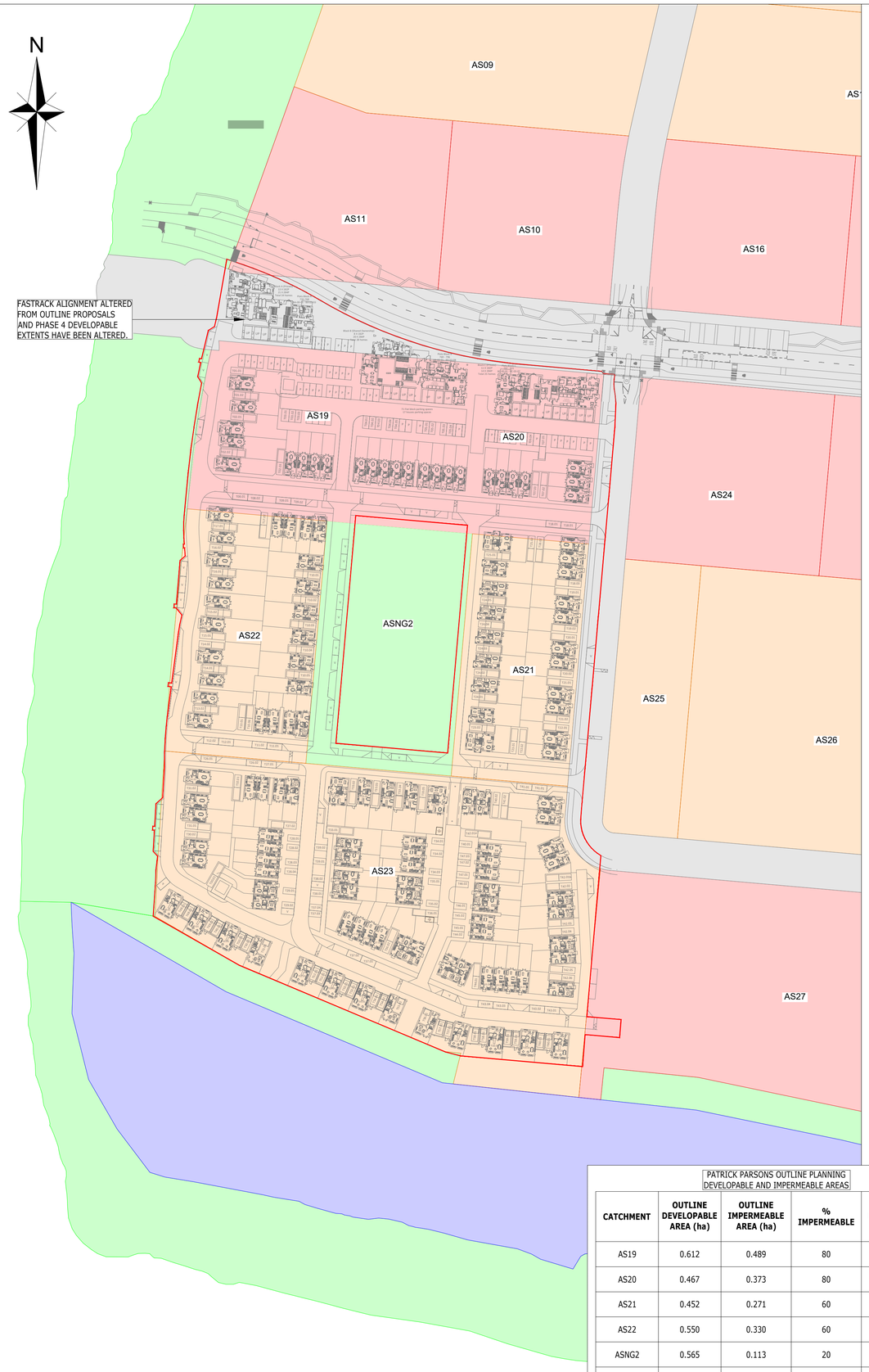
Scales N/A At original size A0

Drawn RDT Date 18.12.18 Checked DCT

Status PRELIMINARY

Drawing No. B18075/155 Rev. P1

T:\B18075 - Whitecliff\Engineering\Issue 4 - PD 2016\Audit\PC\Indd\220 CATCHMENT SCHEDULES.dwg, 18/12/2018 8:33:55, jeffbracey, Pro A3 L PRINT.pc3



PATRICK PARSONS OUTLINE PLANNING DEVELOPABLE AND IMPERMEABLE AREAS

ARDENT PROPOSED DEVELOPABLE AND IMPERMEABLE AREAS

CATCHMENT	OUTLINE DEVELOPABLE AREA (ha)	OUTLINE IMPERMEABLE AREA (ha)	% IMPERMEABLE	PROPOSED DEVELOPABLE AREA (ha)*	PROPOSED IMPERMEABLE AREA (ha)	% IMPERMEABLE
AS19	0.612	0.489	80	1.062	0.726	68
AS20	0.467	0.373	80	0.485	0.293	60
AS21	0.452	0.271	60	0.884	0.502	57
AS22	0.550	0.330	60	0.832	0.486	58
ASNG2	0.565	0.113	20	0.408	0.082	20
AS23	1.718	1.031	60	0.947	0.573	61
TOTAL	**4.363**	**2.607**	**60**	**4.618**	**2.663**	58

*DEVELOPABLE AREAS UPDATED TO SUIT CURRENT PHASE 4 LAYOUT AND DIFFERENT FASTRACK ROAD ALIGNMENT

NOTES:

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KEY:

- PATRICK PARSONS WMP CATCHMENT (60% IMPERMEABLE)
- PATRICK PARSONS WMP CATCHMENT (80% IMPERMEABLE)
- PATRICK PARSONS WMP CATCHMENT (75% IMPERMEABLE)
- PATRICK PARSONS WMP CATCHMENT (20% IMPERMEABLE)
- ARDENT CATCHMENT AREAS (PHASE 4)

0m 10m 50m

Scale: 1:1000 @ A1

Rev	Description	Drn	Chk	App	Date
P1	PRELIMINARY ISSUE	PM	AW	BB	11.12.25

Purpose: SKETCH

Status: NOT YET APPROVED

ARDENT | CONSULTING ENGINEERS
AN EMPLOYEE OWNED COMPANY
Third Floor
The Hallmark Building
52-56 Leadenhall Street
London
EC3M 5JE
Tel: 020 7680 4088
Web: www.ardent-ce.co.uk
E-mail: enquiries@ardent-ce.co.uk

Client: EASTERN QUARRY LTD

Project Title: EASTERN QUARRY (ASHMERE) PHASE 4

Drawing Title: PLANNING SURFACE WATER CATCHMENTS SKETCH

Drawn by	Checked by	Approved by	Revision
PM	AW	BB	P1

A1 Scale: 1:1000@A1

Date: DEC 2025

Drawing Number: 173535-ACE-XX-XX-SK-C-0015

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Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Z1	0.340	5.00	10.351	1500	559011.662	173332.247	2.035
Z2	0.310	5.00	10.390	1500	558939.037	173338.269	2.219
ZJ22	0.060	5.00	10.600	1200	558754.908	173347.769	2.461
ZD3	0.034	5.00	10.729	1350	558849.007	173386.913	1.729
ZD4	0.286	5.00	10.678	1350	558875.047	173384.498	1.878
Z5	0.034	5.00	10.683	1500	558871.040	173344.553	2.648
Z6	0.249	5.00	10.403	1500	558840.366	173347.219	2.436
ZD7	0.030	5.00	10.706	1200	558806.547	173391.649	1.606
ZD8	0.128	5.00	11.003	1200	558762.189	173395.486	2.165
ZJ21	0.100	5.00	10.603	1200	558757.071	173363.366	1.899
Z10	0.036	5.00	10.394	1800	558755.491	173354.541	2.819
Z11	0.070	5.00	9.986	1800	558720.772	173357.785	2.476
ZJ23	0.073	5.00	10.600	1200	558841.027	173355.268	2.136
ZJ24		5.00	10.403	1200	558840.300	173340.536	1.939
ZJ1.1	0.090	5.00	10.100	1200	558733.919	173407.325	1.890
Z12	0.059	5.00	10.020	1350	558725.047	173408.140	2.020
S1	0.050	5.00	10.087	1800	558721.470	173372.571	2.607
S2	0.060	5.00	9.596	1500	558664.189	173347.374	1.356
S51	0.028	5.00	9.970	1200	558666.218	173371.044	2.737
S47	0.065	5.00	10.016	1200	558667.219	173383.033	2.776
S3	0.061	5.00	9.850	1800	558666.783	173377.331	3.170
S4	0.125	5.00	9.711	1500	558654.489	173413.806	1.601
S5	0.057	5.00	9.248	1500	558617.587	173417.036	1.528
S49	0.047	5.00	10.136	1500	558615.011	173387.979	3.013
S6	0.068	5.00	10.202	1500	558612.395	173355.853	1.452
S50	0.026	5.00	10.179	1200	558613.612	173371.122	3.016
S7	0.069	5.00	9.993	2100	558614.473	173381.908	3.429
S8	0.125	5.00	9.370	1500	558603.169	173438.278	1.600
S9	0.035	5.00	8.785	1500	558564.246	173441.660	1.555
S10	0.052	5.00	8.886	1500	558558.897	173404.103	1.856
S46	0.000	5.00	8.946	1200	558556.369	173396.344	2.006
S12	0.033	5.00	8.835	1500	558555.370	173367.975	1.383
S13	0.000		9.030	1500	558556.946	173382.469	1.670
S14	0.014	5.00	9.006	2100	558555.529	173386.852	2.556
S15	0.000		7.000		558527.408	173375.025	0.788
S16	0.128	5.00	9.770	1200	558671.284	173412.751	1.290
ZJ1.3	0.026	5.00	10.200	1200	558712.971	173358.458	2.105

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
Z1	Z1	Z2	72.874	0.600	8.316	8.171	0.145	502.6	600	6.13	50.0
Z1.001 STUB 26	Z2	Z5	68.287	0.600	8.171	8.035	0.136	502.1	600	7.18	46.7
Z2	ZD3	ZD4	26.152	0.600	9.000	8.800	0.200	130.8	450	5.25	50.0
Z2.001 STUB 25	ZD4	Z5	40.145	0.600	8.800	8.185	0.615	65.3	450	5.51	50.0
Z1.002	Z5	Z6	30.790	0.600	8.035	7.967	0.068	452.8	600	7.63	45.3
ZStub S23	ZJ23	Z6	8.076	0.600	8.464	8.342	0.122	66.2	225	5.08	50.0
ZStub S24	ZJ24	Z6	6.683	0.600	8.464	8.342	0.122	54.8	225	5.06	50.0
Z1.003	Z6	Z10	85.190	0.600	7.967	7.725	0.242	352.0	600	8.73	42.2
Z3	ZD7	ZD8	44.524	0.600	9.100	8.838	0.262	169.9	225	5.74	50.0
Z3.001	ZD8	ZJ21	32.525	0.600	8.838	8.704	0.134	242.7	225	6.39	49.5
Z3.002 (STUB S21)	ZJ21	Z10	8.965	0.600	8.704	8.100	0.604	14.8	225	6.44	49.4
Z1.004	Z10	Z11	34.870	0.600	7.575	7.510	0.065	536.5	750	9.21	40.9
ZStub S1.3	ZJ1.3	Z11	7.830	0.600	8.095	8.035	0.060	130.5	225	5.11	50.0
ZSTUB S22	ZJ22	Z10	6.797	0.600	8.139	8.100	0.039	174.3	225	5.11	50.0
Z1.005	Z11	S1	14.737	0.600	7.510	7.480	0.030	491.2	750	9.41	40.5
Stub S1.1	ZJ1.1	Z12	8.909	0.600	8.210	8.150	0.060	148.5	225	5.14	50.0
Stub S1.2	S16	Z12	7.760	0.600	8.480	8.150	0.330	23.5	225	5.11	50.0
Z4.000	Z12	S1	35.783	0.600	8.000	7.855	0.145	246.8	375	5.66	50.0
1.000	S1	S3	54.926	0.600	7.480	6.680	0.800	68.7	750	5.27	35.0
2.000	S2	S51	23.757	0.600	8.240	7.233	1.007	23.6	225	5.15	35.4
2.001	S51	S3	6.312	0.600	7.234	7.206	0.028	225.4	225	5.27	35.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
Z1	1.079	305.1	46.1	1.435	1.619	0.340	0.0	156	0.786
Z1.001 STUB 26	1.080	305.3	82.3	1.619	2.048	0.650	0.0	212	0.922
Z2	1.776	282.5	4.6	1.279	1.428	0.034	0.0	39	0.671
Z2.001 STUB 25	2.519	400.6	43.4	1.428	2.048	0.320	0.0	99	1.671
Z1.002	1.138	321.6	123.3	2.048	1.836	1.004	0.0	257	1.065
ZStub S23	1.610	64.0	9.9	1.911	1.836	0.073	0.0	59	1.172
ZStub S24	1.771	70.4	0.0	1.714	1.836	0.000	0.0	0	0.000
Z1.003	1.292	365.3	151.7	1.836	2.069	1.326	0.0	269	1.235
Z3	1.000	39.8	4.1	1.381	1.940	0.030	0.0	49	0.650
Z3.001	0.835	33.2	21.2	1.940	1.674	0.158	0.0	131	0.883
Z3.002 (STUB S21)	3.413	135.7	34.5	1.674	2.069	0.258	0.0	77	2.860
Z1.004	1.201	530.5	186.2	2.069	1.726	1.680	0.0	306	1.100
ZStub S1.3	1.143	45.4	3.5	1.880	1.726	0.026	0.0	43	0.687
ZSTUB S22	0.987	39.2	8.1	2.236	2.069	0.060	0.0	69	0.780
Z1.005	1.256	554.7	195.0	1.726	1.857	1.776	0.0	306	1.150
Stub S1.1	1.070	42.6	12.2	1.665	1.645	0.090	0.0	82	0.926
Stub S1.2	2.709	107.7	17.3	1.065	1.645	0.128	0.0	61	2.008
Z4.000	1.149	126.9	37.5	1.645	1.857	0.277	0.0	140	1.005
1.000	3.380	1493.1	199.5	1.857	2.420	2.103	0.0	183	2.387
2.000	2.705	107.5	5.8	1.131	2.512	0.060	0.0	35	1.442
2.001	0.866	34.5	8.3	2.511	2.419	0.088	0.0	75	0.716

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	S47	S3	5.718	0.600	7.240	7.206	0.034	168.2	225	5.09	35.5
1.001	S3	S7	52.510	0.600	6.681	6.564	0.117	448.8	750	5.94	33.2
4.000	S4	S5	37.043	0.600	8.110	7.720	0.390	95.0	300	5.38	34.7
4.001	S5	S49	29.171	0.600	7.720	7.123	0.597	48.9	300	5.60	34.1
4.002	S49	S7	6.095	0.600	7.123	7.014	0.109	55.9	300	5.65	34.0
5.000	S6	S50	15.318	0.600	8.750	7.171	1.579	9.7	225	5.06	35.6
5.001	S50	S7	10.820	0.600	7.163	7.089	0.074	146.2	225	5.23	35.1
1.002	S7	S14	59.151	0.600	6.564	6.450	0.114	518.9	750	6.74	31.2
6.000	S8	S9	39.069	0.600	7.770	7.230	0.540	72.4	300	5.35	34.8
6.001	S9	S10	37.936	0.600	7.230	7.030	0.200	189.7	300	5.91	33.3
6.002	S10	S46	8.160	0.600	7.030	6.940	0.090	90.7	300	5.99	33.0
6.003	S46	S14	9.529	0.600	6.940	6.900	0.040	238.2	300	6.15	32.6
7.000	S12	S13	14.580	0.600	7.452	7.360	0.092	158.5	225	5.23	35.1
7.001	S13	S14	4.606	0.600	7.360	6.976	0.384	12.0	225	5.25	35.1
1.003	S14	S15	30.507	0.600	6.450	6.212	0.238	128.2	750	6.95	30.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.000	1.005	40.0	6.3	2.551	2.419	0.065	0.0	60	0.737
1.001	1.314	580.6	208.5	2.419	2.679	2.317	0.0	309	1.210
4.000	1.613	114.0	11.8	1.301	1.228	0.125	0.0	65	1.053
4.001	2.254	159.3	16.8	1.228	2.713	0.182	0.0	65	1.480
4.002	2.106	148.9	21.1	2.713	2.679	0.229	0.0	76	1.505
5.000	4.225	168.0	6.6	1.227	2.783	0.068	0.0	30	2.075
5.001	1.079	42.9	8.9	2.791	2.679	0.094	0.0	70	0.858
1.002	1.221	539.6	229.1	2.679	1.806	2.709	0.0	341	1.174
6.000	1.850	130.8	11.8	1.300	1.255	0.125	0.0	61	1.163
6.001	1.138	80.4	14.4	1.255	1.556	0.160	0.0	86	0.868
6.002	1.652	116.7	19.0	1.556	1.706	0.212	0.0	81	1.224
6.003	1.014	71.7	18.7	1.706	1.806	0.212	0.0	105	0.858
7.000	1.036	41.2	3.1	1.158	1.445	0.033	0.0	42	0.614
7.001	3.799	151.0	3.1	1.445	1.805	0.033	0.0	22	1.541
1.003	2.470	1091.2	247.0	1.806	0.038	2.968	0.0	241	2.016

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	30.0		

Storm Durations

15	30	60	120	240	360	480	960	1440	10080

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	20	0	0
100	45	0	0

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Z1	11	8.438	0.122	30.4	0.8256	0.0000	OK
15 minute winter	Z2	12	8.333	0.162	55.5	0.9676	0.0000	OK
15 minute winter	ZJ22	10	8.198	0.059	5.4	0.1103	0.0000	OK
15 minute winter	ZD3	10	9.032	0.032	3.0	0.0651	0.0000	OK
15 minute winter	ZD4	11	8.881	0.081	28.5	0.4856	0.0000	OK
15 minute winter	Z5	12	8.251	0.216	81.7	0.4638	0.0000	OK
15 minute winter	Z6	12	8.182	0.215	102.9	1.0411	0.0000	OK
15 minute winter	ZD7	11	9.138	0.038	2.7	0.0650	0.0000	OK
15 minute winter	ZD8	11	8.941	0.103	14.0	0.2996	0.0000	OK
15 minute winter	ZJ21	11	8.770	0.066	21.9	0.1790	0.0000	OK
15 minute winter	Z10	12	7.827	0.252	123.2	0.7386	0.0000	OK
15 minute winter	Z11	13	7.733	0.223	128.7	0.7565	0.0000	OK
15 minute winter	ZJ23	10	8.515	0.051	6.5	0.1097	0.0000	OK
15 minute summer	ZJ24	1	8.464	0.000	0.0	0.0000	0.0000	OK
15 minute winter	ZJ1.1	10	8.280	0.070	8.1	0.1786	0.0000	OK
15 minute winter	Z12	11	8.113	0.113	24.6	0.2614	0.0000	OK
15 minute winter	S1	13	7.638	0.158	152.1	0.4917	0.0000	OK
15 minute winter	S2	10	8.274	0.034	5.4	0.1051	0.0000	OK
15 minute winter	S51	11	7.311	0.078	7.8	0.1126	0.0000	OK
15 minute winter	S47	10	7.301	0.061	5.8	0.1127	0.0000	OK
15 minute winter	S3	13	6.970	0.290	166.0	0.9056	0.0000	OK
15 minute winter	S4	10	8.174	0.064	11.2	0.2609	0.0000	OK
15 minute winter	S5	11	7.783	0.063	16.0	0.1828	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	Z1	Z1	Z2	28.9	0.580	0.095	3.7229	
15 minute winter	Z2	Z1.001 STUB 26	Z5	51.4	0.687	0.168	5.2064	
15 minute winter	ZJ22	ZSTUB S22	Z10	5.3	0.667	0.135	0.0541	
15 minute winter	ZD3	Z2	ZD4	2.9	0.256	0.010	0.3177	
15 minute winter	ZD4	Z2.001 STUB 25	Z5	27.7	1.457	0.069	0.7623	
15 minute winter	Z5	Z1.002	Z6	79.5	0.883	0.247	2.8003	
15 minute winter	Z6	Z1.003	Z10	98.9	1.144	0.271	7.3671	
15 minute winter	ZD7	Z3	ZD8	2.6	0.240	0.064	0.4948	
15 minute winter	ZD8	Z3.001	ZJ21	13.5	0.993	0.408	0.4460	
15 minute winter	ZJ21	Z3.002 (STUB S21)	Z10	22.0	2.397	0.162	0.0824	
15 minute winter	Z10	Z1.004	Z11	123.0	1.033	0.232	4.1626	
15 minute winter	Z11	Z1.005	S1	129.7	1.478	0.234	1.3017	
15 minute winter	ZJ23	ZStub S23	Z6	6.4	0.998	0.100	0.0520	
15 minute summer	ZJ24	ZStub S24	Z6	0.0	0.000	0.000	0.0000	
15 minute winter	ZJ1.1	Stub S1.1	Z12	7.9	0.792	0.186	0.0891	
15 minute winter	Z12	Z4.000	S1	24.3	0.888	0.191	0.9793	
15 minute winter	S1	1.000	S3	152.0	1.398	0.102	6.1580	
15 minute winter	S2	2.000	S51	5.3	0.693	0.049	0.1896	
15 minute winter	S51	2.001	S3	7.7	0.674	0.223	0.0722	
15 minute winter	S47	3.000	S3	5.7	0.686	0.143	0.0477	
15 minute winter	S3	1.001	S7	165.7	1.044	0.285	8.3421	
15 minute winter	S4	4.000	S5	10.9	1.014	0.096	0.3985	
15 minute winter	S5	4.001	S49	15.8	1.196	0.099	0.3878	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S49	11	7.206	0.083	19.8	0.1849	0.0000	OK
15 minute winter	S6	10	8.779	0.029	6.1	0.0924	0.0000	OK
15 minute winter	S50	10	7.233	0.070	8.3	0.0976	0.0000	OK
15 minute winter	S7	13	6.860	0.296	189.9	1.2033	0.0000	OK
15 minute winter	S8	10	7.828	0.058	11.2	0.2389	0.0000	OK
15 minute winter	S9	11	7.315	0.085	14.0	0.2077	0.0000	OK
15 minute winter	S10	11	7.120	0.090	18.3	0.2349	0.0000	OK
15 minute winter	S46	11	7.050	0.110	18.1	0.1239	0.0000	OK
15 minute winter	S12	10	7.496	0.044	3.0	0.1083	0.0000	OK
15 minute winter	S13	11	7.383	0.023	2.9	0.0399	0.0000	OK
15 minute winter	S14	13	6.676	0.226	207.9	0.8208	0.0000	OK
15 minute winter	S15	14	6.427	0.215	206.1	0.0000	0.0000	OK
15 minute winter	S16	10	8.533	0.053	11.5	0.2163	0.0000	OK
15 minute winter	ZJ1.3	10	8.130	0.035	2.3	0.0531	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S49	4.002	S7	19.9	1.368	0.134	0.0888	
15 minute winter	S6	5.000	S50	6.0	1.048	0.036	0.0913	
15 minute winter	S50	5.001	S7	8.2	0.810	0.191	0.1096	
15 minute winter	S7	1.002	S14	189.2	1.402	0.351	8.0777	
15 minute winter	S8	6.000	S9	10.9	0.863	0.083	0.5050	
15 minute winter	S9	6.001	S10	13.9	0.811	0.172	0.6481	
15 minute winter	S10	6.002	S46	18.1	0.882	0.155	0.1674	
15 minute winter	S46	6.003	S14	17.8	0.814	0.249	0.2096	
15 minute winter	S12	7.000	S13	2.9	0.806	0.070	0.0541	
15 minute winter	S13	7.001	S14	2.9	1.451	0.019	0.0092	
15 minute winter	S14	1.003	S15	206.1	1.922	0.189	3.2897	122.4
15 minute winter	S16	Stub S1.2	Z12	11.3	1.688	0.105	0.0521	
15 minute winter	ZJ1.3	ZStub S1.3	Z11	2.3	0.586	0.050	0.0302	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Z1	12	8.656	0.340	126.6	2.3033	0.0000	OK
15 minute winter	Z2	12	8.644	0.473	224.1	2.8168	0.0000	OK
15 minute winter	ZJ22	10	8.273	0.134	22.4	0.2491	0.0000	OK
15 minute winter	ZD3	10	9.064	0.064	12.7	0.1285	0.0000	OK
15 minute winter	ZD4	10	8.964	0.164	119.0	0.9859	0.0000	OK
15 minute winter	Z5	12	8.591	0.556	312.9	1.1960	0.0000	OK
15 minute winter	Z6	12	8.511	0.544	406.2	2.6303	0.0000	OK
15 minute winter	ZD7	11	9.257	0.157	11.2	0.2662	0.0000	OK
15 minute winter	ZD8	12	9.236	0.398	54.6	1.1565	0.0000	SURCHARGED
15 minute winter	ZJ21	10	8.859	0.155	86.2	0.4204	0.0000	OK
15 minute winter	Z10	12	8.147	0.572	510.6	1.6755	0.0000	OK
15 minute winter	Z11	12	7.989	0.479	542.1	1.6247	0.0000	OK
15 minute winter	ZJ23	11	8.581	0.117	27.2	0.2527	0.0000	OK
15 minute winter	ZJ24	12	8.515	0.051	1.9	0.0578	0.0000	OK
15 minute winter	ZJ1.1	10	8.376	0.166	33.5	0.4253	0.0000	OK
15 minute winter	Z12	10	8.265	0.265	102.3	0.6110	0.0000	OK
15 minute winter	S1	12	7.828	0.348	647.3	1.0842	0.0000	OK
15 minute winter	S2	10	8.309	0.069	22.4	0.2139	0.0000	OK
15 minute winter	S51	12	7.655	0.422	32.6	0.6067	0.0000	SURCHARGED
15 minute winter	S47	12	7.642	0.402	24.2	0.7368	0.0000	SURCHARGED
15 minute winter	S3	12	7.628	0.948	705.8	2.9606	0.0000	SURCHARGED
15 minute winter	S4	10	8.247	0.137	46.6	0.5644	0.0000	OK
15 minute winter	S5	10	7.856	0.136	67.1	0.3915	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	Z1	Z1	Z2	108.6	0.744	0.356	14.6759	
15 minute winter	Z2	Z1.001 STUB 26	Z5	186.4	0.834	0.610	17.4357	
15 minute winter	ZJ22	ZSTUB S22	Z10	22.1	0.961	0.563	0.1564	
15 minute winter	ZD3	Z2	ZD4	12.5	0.396	0.044	0.8625	
15 minute winter	ZD4	Z2.001 STUB 25	Z5	117.7	1.756	0.294	4.0041	
15 minute winter	Z5	Z1.002	Z6	298.6	1.132	0.928	8.3296	
15 minute winter	Z6	Z1.003	Z10	400.9	1.658	1.098	20.4695	
15 minute winter	ZD7	Z3	ZD8	12.6	0.369	0.318	1.5460	
15 minute winter	ZD8	Z3.001	ZJ21	50.5	1.364	1.522	1.1214	
15 minute winter	ZJ21	Z3.002 (STUB S21)	Z10	85.4	3.241	0.629	0.2358	
15 minute winter	Z10	Z1.004	Z11	513.7	1.559	0.968	11.4596	
15 minute winter	Z11	Z1.005	S1	541.5	2.241	0.976	3.6569	
15 minute winter	ZJ23	ZStub S23	Z6	26.9	1.411	0.421	0.2083	
15 minute winter	ZJ24	ZStub S24	Z6	-1.9	-0.107	-0.027	0.1296	
15 minute winter	ZJ1.1	Stub S1.1	Z12	32.9	1.118	0.774	0.2622	
15 minute winter	Z12	Z4.000	S1	100.9	1.300	0.795	2.7743	
15 minute winter	S1	1.000	S3	643.6	1.830	0.431	17.5668	
15 minute winter	S2	2.000	S51	22.2	0.973	0.206	0.5914	
15 minute winter	S51	2.001	S3	31.8	0.984	0.922	0.2510	
15 minute winter	S47	3.000	S3	22.0	0.966	0.551	0.2274	
15 minute winter	S3	1.001	S7	704.3	1.600	1.213	23.1107	
15 minute winter	S4	4.000	S5	45.9	1.476	0.402	1.1552	
15 minute winter	S5	4.001	S49	66.2	1.630	0.416	1.4262	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S49	12	7.447	0.324	83.7	0.7230	0.0000	SURCHARGED
15 minute winter	S6	10	8.809	0.059	25.3	0.1860	0.0000	OK
15 minute winter	S50	12	7.439	0.276	34.9	0.3842	0.0000	SURCHARGED
15 minute winter	S7	12	7.393	0.829	826.7	3.3698	0.0000	SURCHARGED
15 minute winter	S8	10	7.892	0.122	46.6	0.4997	0.0000	OK
15 minute winter	S9	11	7.426	0.196	58.9	0.4782	0.0000	OK
15 minute winter	S10	11	7.274	0.244	76.3	0.6360	0.0000	OK
15 minute winter	S46	11	7.210	0.270	76.3	0.3056	0.0000	OK
15 minute winter	S12	10	7.541	0.089	12.3	0.2208	0.0000	OK
15 minute winter	S13	10	7.407	0.047	12.1	0.0833	0.0000	OK
15 minute winter	S14	12	7.005	0.555	915.7	2.0118	0.0000	OK
15 minute winter	S15	12	6.716	0.504	915.1	0.0000	0.0000	OK
15 minute winter	S16	10	8.600	0.120	47.7	0.4937	0.0000	OK
15 minute winter	ZJ1.3	10	8.170	0.075	9.7	0.1131	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S49	4.002	S7	78.8	1.845	0.529	0.4292	
15 minute winter	S6	5.000	S50	25.2	1.337	0.150	0.3583	
15 minute winter	S50	5.001	S7	34.1	1.138	0.796	0.4303	
15 minute winter	S7	1.002	S14	827.8	1.954	1.534	23.3402	
15 minute winter	S8	6.000	S9	45.9	1.223	0.351	1.4674	
15 minute winter	S9	6.001	S10	58.2	1.058	0.723	2.0873	
15 minute winter	S10	6.002	S46	76.3	1.187	0.654	0.5230	
15 minute winter	S46	6.003	S14	76.2	1.247	1.062	0.5764	
15 minute winter	S12	7.000	S13	12.1	1.200	0.294	0.1502	
15 minute winter	S13	7.001	S14	12.0	2.136	0.080	0.0260	
15 minute winter	S14	1.003	S15	915.1	2.760	0.839	10.1284	510.5
15 minute winter	S16	Stub S1.2	Z12	47.4	2.337	0.440	0.1626	
15 minute winter	ZJ1.3	ZStub S1.3	Z11	9.6	0.868	0.210	0.0863	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Z1	13	9.721	1.405	195.7	9.5224	0.0000	SURCHARGED
15 minute winter	Z2	13	9.697	1.526	350.1	9.0936	0.0000	SURCHARGED
15 minute winter	ZJ22	12	8.868	0.729	34.5	1.3566	0.0000	SURCHARGED
15 minute winter	ZD3	12	9.804	0.804	64.9	1.6248	0.0000	SURCHARGED
15 minute winter	ZD4	12	9.682	0.882	194.4	5.2892	0.0000	SURCHARGED
15 minute winter	Z5	12	9.572	1.537	400.6	3.3067	0.0000	SURCHARGED
15 minute winter	Z6	12	9.434	1.467	525.2	7.0935	0.0000	SURCHARGED
15 minute winter	ZD7	12	10.104	1.004	17.3	1.6980	0.0000	SURCHARGED
15 minute winter	ZD8	12	10.074	1.236	79.2	3.5897	0.0000	SURCHARGED
15 minute winter	ZJ21	12	9.441	0.737	125.3	1.9993	0.0000	SURCHARGED
15 minute winter	Z10	12	8.851	1.276	669.2	3.7347	0.0000	SURCHARGED
15 minute winter	Z11	12	8.693	1.183	700.8	4.0123	0.0000	SURCHARGED
15 minute winter	ZJ23	12	9.475	1.011	42.0	2.1804	0.0000	SURCHARGED
15 minute winter	ZJ24	12	9.454	0.990	10.8	1.1193	0.0000	SURCHARGED
15 minute winter	ZJ1.1	12	8.801	0.591	51.8	1.5138	0.0000	SURCHARGED
15 minute winter	Z12	12	8.727	0.727	154.5	1.6788	0.0000	SURCHARGED
15 minute winter	S1	12	8.583	1.103	833.9	3.4417	0.0000	SURCHARGED
15 minute winter	S2	12	8.350	0.110	34.5	0.3391	0.0000	OK
15 minute winter	S51	12	8.300	1.067	50.3	1.5338	0.0000	SURCHARGED
15 minute winter	S47	12	8.273	1.033	37.4	1.8944	0.0000	SURCHARGED
15 minute winter	S3	12	8.247	1.567	921.4	4.8921	0.0000	SURCHARGED
15 minute winter	S4	10	8.290	0.180	71.9	0.7389	0.0000	OK
15 minute winter	S5	12	8.168	0.448	103.8	1.2922	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	Z1	Z1	Z2	182.2	0.759	0.597	20.5269	
15 minute winter	Z2	Z1.001 STUB 26	Z5	321.1	1.140	1.052	19.2349	
15 minute winter	ZJ22	ZSTUB S22	Z10	32.1	1.036	0.818	0.2703	
15 minute winter	ZD3	Z2	ZD4	65.9	0.446	0.233	4.1436	
15 minute winter	ZD4	Z2.001 STUB 25	Z5	169.4	1.782	0.423	6.3607	
15 minute winter	Z5	Z1.002	Z6	395.1	1.403	1.228	8.6728	
15 minute winter	Z6	Z1.003	Z10	519.4	1.844	1.422	23.9961	
15 minute winter	ZD7	Z3	ZD8	17.0	0.504	0.427	1.7708	
15 minute winter	ZD8	Z3.001	ZJ21	68.2	1.716	2.057	1.2936	
15 minute winter	ZJ21	Z3.002 (STUB S21)	Z10	118.0	3.307	0.869	0.3565	
15 minute winter	Z10	Z1.004	Z11	665.8	1.534	1.255	15.3470	
15 minute winter	Z11	Z1.005	S1	707.2	2.160	1.275	6.4861	
15 minute winter	ZJ23	ZStub S23	Z6	38.1	1.473	0.595	0.3212	
15 minute winter	ZJ24	ZStub S24	Z6	-10.8	-0.339	-0.153	0.2658	
15 minute winter	ZJ1.1	Stub S1.1	Z12	48.6	1.221	1.141	0.3543	
15 minute winter	Z12	Z4.000	S1	149.8	1.416	1.181	3.9468	
15 minute winter	S1	1.000	S3	839.8	1.908	0.562	24.1741	
15 minute winter	S2	2.000	S51	34.2	1.081	0.318	0.7002	
15 minute winter	S51	2.001	S3	40.1	1.046	1.164	0.2510	
15 minute winter	S47	3.000	S3	30.7	1.011	0.769	0.2274	
15 minute winter	S3	1.001	S7	926.8	2.106	1.596	23.1107	
15 minute winter	S4	4.000	S5	72.0	1.565	0.631	2.0419	
15 minute winter	S5	4.001	S49	93.1	1.677	0.584	2.0542	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S49	12	7.964	0.841	120.1	1.8797	0.0000	SURCHARGED
15 minute winter	S6	10	8.823	0.073	39.1	0.2327	0.0000	OK
15 minute winter	S50	12	7.961	0.798	53.9	1.1090	0.0000	SURCHARGED
15 minute winter	S7	12	7.856	1.292	1085.3	5.2537	0.0000	SURCHARGED
15 minute winter	S8	11	7.927	0.157	71.9	0.6459	0.0000	OK
15 minute winter	S9	12	7.760	0.530	91.2	1.2948	0.0000	SURCHARGED
15 minute winter	S10	12	7.528	0.498	112.9	1.2992	0.0000	SURCHARGED
15 minute winter	S46	12	7.400	0.460	109.6	0.5199	0.0000	SURCHARGED
15 minute winter	S12	10	7.565	0.113	19.0	0.2801	0.0000	OK
15 minute summer	S13	10	7.417	0.057	17.9	0.1006	0.0000	OK
15 minute winter	S14	12	7.258	0.808	1209.1	2.9331	0.0000	SURCHARGED
15 minute winter	S15	12	6.877	0.665	1208.3	0.0000	0.0000	OK
15 minute winter	S16	12	8.859	0.379	73.7	1.5582	0.0000	SURCHARGED
15 minute winter	ZJ1.3	13	8.691	0.596	15.0	0.8953	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S49	4.002	S7	110.4	1.916	0.742	0.4292	
15 minute winter	S6	5.000	S50	38.9	1.373	0.232	0.3905	
15 minute winter	S50	5.001	S7	48.1	1.209	1.121	0.4303	
15 minute winter	S7	1.002	S14	1087.7	2.472	2.016	26.0336	
15 minute winter	S8	6.000	S9	71.1	1.297	0.543	2.1051	
15 minute winter	S9	6.001	S10	84.7	1.203	1.053	2.6714	
15 minute winter	S10	6.002	S46	109.6	1.557	0.939	0.5746	
15 minute winter	S46	6.003	S14	107.7	1.529	1.502	0.6710	
15 minute winter	S12	7.000	S13	18.7	1.399	0.453	0.1984	
15 minute summer	S13	7.001	S14	18.7	2.294	0.124	0.1058	
15 minute winter	S14	1.003	S15	1208.3	2.851	1.107	13.0088	784.9
15 minute winter	S16	Stub S1.2	Z12	72.0	2.286	0.668	0.3086	
15 minute winter	ZJ1.3	ZStub S1.3	Z11	14.5	0.947	0.319	0.3114	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Z1	12	10.351	2.035	236.3	13.7953	13.4774	FLOOD
15 minute winter	Z2	12	10.384	2.213	387.8	13.1822	0.0000	FLOOD RISK
15 minute winter	ZJ22	12	9.545	1.406	41.7	2.6181	0.0000	SURCHARGED
15 minute winter	ZD3	12	10.512	1.512	102.8	3.0557	0.0000	FLOOD RISK
15 minute winter	ZD4	12	10.512	1.712	247.9	10.2694	0.0000	FLOOD RISK
15 minute winter	Z5	12	10.339	2.304	462.4	4.9581	0.0000	SURCHARGED
15 minute winter	Z6	12	10.189	2.222	621.0	10.7394	0.0000	FLOOD RISK
15 minute winter	ZD7	12	10.706	1.606	32.3	2.7157	2.0369	FLOOD
15 minute winter	ZD8	12	10.749	1.911	98.9	5.5508	0.0000	FLOOD RISK
15 minute winter	ZJ21	12	10.200	1.496	140.7	4.0554	0.0000	SURCHARGED
15 minute winter	Z10	12	9.503	1.928	744.7	5.6466	0.0000	SURCHARGED
15 minute winter	Z11	12	9.311	1.801	793.3	6.1101	0.0000	SURCHARGED
15 minute winter	ZJ23	12	10.268	1.804	50.8	3.8895	0.0000	SURCHARGED
15 minute winter	ZJ24	12	10.184	1.720	17.0	1.9450	0.0000	FLOOD RISK
15 minute winter	ZJ1.1	12	9.470	1.260	62.6	3.2249	0.0000	SURCHARGED
15 minute winter	Z12	12	9.372	1.372	168.6	3.1665	0.0000	SURCHARGED
15 minute winter	S1	12	9.171	1.691	948.3	5.2745	0.0000	SURCHARGED
15 minute winter	S2	12	8.879	0.639	41.7	1.9783	0.0000	SURCHARGED
15 minute winter	S51	12	8.801	1.568	56.4	2.2541	0.0000	SURCHARGED
15 minute winter	S47	12	8.780	1.540	45.2	2.8222	0.0000	SURCHARGED
15 minute winter	S3	12	8.737	2.057	1050.0	6.4212	0.0000	SURCHARGED
15 minute winter	S4	12	8.747	0.637	86.9	2.6175	0.0000	SURCHARGED
15 minute winter	S5	12	8.602	0.882	117.0	2.5450	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	Z1	Z1	Z2	172.3	0.772	0.565	20.5269	
15 minute winter	Z2	Z1.001 STUB 26	Z5	376.8	1.338	1.234	19.2349	
15 minute winter	ZJ22	ZSTUB S22	Z10	37.6	1.070	0.959	0.2703	
15 minute winter	ZD3	Z2	ZD4	-79.2	-0.599	-0.280	4.1436	
15 minute winter	ZD4	Z2.001 STUB 25	Z5	183.0	1.777	0.457	6.3607	
15 minute winter	Z5	Z1.002	Z6	435.3	1.546	1.353	8.6728	
15 minute winter	Z6	Z1.003	Z10	577.3	2.050	1.580	23.9961	
15 minute winter	ZD7	Z3	ZD8	20.0	0.503	0.503	1.7708	
15 minute winter	ZD8	Z3.001	ZJ21	71.2	1.790	2.146	1.2936	
15 minute winter	ZJ21	Z3.002 (STUB S21)	Z10	118.0	3.299	0.870	0.3565	
15 minute winter	Z10	Z1.004	Z11	742.7	1.688	1.400	15.3470	
15 minute winter	Z11	Z1.005	S1	789.7	2.094	1.424	6.4861	
15 minute winter	ZJ23	ZStub S23	Z6	40.1	1.430	0.626	0.3212	
15 minute winter	ZJ24	ZStub S24	Z6	-17.0	-0.428	-0.242	0.2658	
15 minute winter	ZJ1.1	Stub S1.1	Z12	51.3	1.290	1.205	0.3543	
15 minute winter	Z12	Z4.000	S1	157.1	1.461	1.238	3.9468	
15 minute winter	S1	1.000	S3	944.6	2.146	0.633	24.1741	
15 minute winter	S2	2.000	S51	38.1	1.182	0.354	0.9448	
15 minute winter	S51	2.001	S3	45.5	1.144	1.321	0.2510	
15 minute winter	S47	3.000	S3	34.9	1.006	0.873	0.2274	
15 minute winter	S3	1.001	S7	1046.6	2.378	1.803	23.1107	
15 minute winter	S4	4.000	S5	78.1	1.552	0.685	2.6085	
15 minute winter	S5	4.001	S49	98.2	1.724	0.616	2.0542	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S49	12	8.354	1.231	129.0	2.7521	0.0000	SURCHARGED
15 minute winter	S6	11	8.840	0.090	47.3	0.2864	0.0000	OK
15 minute winter	S50	12	8.369	1.206	64.9	1.6762	0.0000	SURCHARGED
15 minute winter	S7	12	8.219	1.655	1249.1	6.7329	0.0000	SURCHARGED
15 minute winter	S8	12	8.246	0.476	86.9	1.9565	0.0000	SURCHARGED
15 minute winter	S9	12	8.062	0.832	100.7	2.0323	0.0000	SURCHARGED
15 minute winter	S10	12	7.766	0.736	125.8	1.9202	0.0000	SURCHARGED
15 minute winter	S46	12	7.601	0.661	117.3	0.7478	0.0000	SURCHARGED
15 minute winter	S12	10	7.578	0.126	22.9	0.3125	0.0000	OK
15 minute summer	S13	9	7.422	0.062	21.5	0.1095	0.0000	OK
15 minute winter	S14	12	7.421	0.971	1389.5	3.5211	0.0000	SURCHARGED
15 minute winter	S15	12	6.906	0.694	1388.4	0.0000	0.0000	OK
15 minute winter	S16	12	9.540	1.060	89.0	4.3551	0.0000	FLOOD RISK
15 minute winter	ZJ1.3	12	9.319	1.224	18.1	1.8386	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S49	4.002	S7	115.0	1.858	0.772	0.4292	
15 minute winter	S6	5.000	S50	46.8	1.503	0.278	0.4186	
15 minute winter	S50	5.001	S7	55.9	1.406	1.303	0.4303	
15 minute winter	S7	1.002	S14	1245.8	2.831	2.309	26.0336	
15 minute winter	S8	6.000	S9	77.8	1.321	0.595	2.7512	
15 minute winter	S9	6.001	S10	89.6	1.273	1.114	2.6714	
15 minute winter	S10	6.002	S46	117.3	1.666	1.005	0.5746	
15 minute winter	S46	6.003	S14	117.0	1.662	1.633	0.6710	
15 minute winter	S12	7.000	S13	22.6	1.479	0.549	0.2261	
15 minute summer	S13	7.001	S14	21.5	2.403	0.142	0.1096	
15 minute winter	S14	1.003	S15	1388.4	3.155	1.272	13.2023	927.6
15 minute winter	S16	Stub S1.2	Z12	78.7	2.380	0.730	0.3086	
15 minute winter	ZJ1.3	ZStub S1.3	Z11	25.4	0.993	0.559	0.3114	

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Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Z17	0.000	5.00	9.755	1350	558808.760	173291.991	1.505
Z18	0.000	5.00	9.958	1350	558825.150	173290.357	1.777
Z19	0.107	5.00	10.114	1350	558841.359	173285.639	2.004
Z20	0.053	5.00	10.290	1200	558868.880	173323.415	1.490
Z21	0.078	5.00	9.828	1500	558865.528	173283.361	2.618
Z22	0.090	5.00	9.204	2100	558860.633	173226.964	2.260
Z23	0.112	5.00	9.199	1800	558791.612	173232.846	2.508
Z25	0.024	5.00	9.061	1800	558712.586	173250.103	2.551
Z26	0.203	5.00	9.508	1200	558782.487	173292.909	1.408
Z27	0.059	5.00	9.750	1200	558758.316	173295.531	1.774
Z28	0.075	5.00	9.780	1200	558746.611	173294.250	1.870
Z29	0.072	5.00	9.796	1200	558718.626	173334.378	1.496
Z30	0.041	5.00	9.497	1350	558715.162	173297.300	1.617
ZJ.35	0.240	5.00	9.377	1500	558900.974	173222.780	2.047
ZJ2.20	0.177	5.00	9.930	1200	558872.198	173283.040	2.243
ZJ2.17	0.038	5.00	9.100	1200	558859.984	173219.436	1.364
ZJ2.15	0.095	5.00	9.400	1200	558803.673	173240.351	2.100
ZJ2.16	0.080	5.00	9.200	1200	558790.921	173225.429	1.900
ZJ2.13	0.013	5.00	9.200	1200	558719.840	173253.156	2.030
ZJ2.8	0.022	5.00	10.000	1200	558727.343	173338.086	1.531
ZJ2.7	0.024	5.00	10.000	1200	558710.999	173335.714	1.548
ZJ2.11	0.042	5.00	9.700	1200	558724.340	173306.217	1.430
ZJ2.12	0.044	5.00	9.300	1200	558721.052	173266.491	2.126
ZJ2.13A	0.056	5.00	9.077	1200	558729.106	173247.279	1.850
ZJ2.20A	0.172	5.00	10.390	1200	558876.243	173322.738	1.480
S18	0.060	5.00	9.155	1500	558712.609	173267.213	2.676
S19	0.070	5.00	9.846	1500	558663.412	173318.612	1.356
S20	0.027	5.00	9.381	1500	558658.765	173267.841	1.501
S21	0.104	5.00	9.600	2100	558658.987	173272.182	3.230
S22	0.102	5.00	9.854	1500	558608.763	173333.115	1.654
S23	0.070	5.00	9.300	1500	558602.197	173247.406	1.530
S24	0.176	5.00	8.956	2100	558604.510	173276.664	2.691
S25	0.073	5.00	8.413	1350	558552.304	173330.241	1.508
S45	0.000	5.00	8.679	1200	558550.463	173306.361	1.924
S26	0.048	5.00	8.836	1350	558547.056	173293.294	2.166
S27	0.060	5.00	8.504	1500	558545.028	173241.925	1.554
S28	0.011	5.00	8.945	1200	558547.513	173277.253	2.235
S29	0.007	5.00	8.925	2100	558546.332	173281.711	2.775
S30	0.000		7.000		558510.086	173277.630	0.920
S31	0.048	5.00	8.979	1350	558711.994	173188.823	1.579

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S32	0.061	5.00	9.231	1200	558715.232	173225.635	2.001
S33	0.000	5.00	8.977	1800	558720.913	173239.415	2.440
ZJ2.9	0.073	5.00	9.600	1200	558707.492	173298.059	1.320

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
Z1	Z17	Z18	16.466	0.600	8.250	8.181	0.069	238.6	375	5.23	50.0
Z1.001	Z18	Z19	16.882	0.600	8.181	8.111	0.070	241.2	375	5.48	50.0
Z1.002 STUB S19	Z19	Z21	24.314	0.600	8.110	7.585	0.525	46.3	375	5.63	50.0
Z2	Z20	Z21	46.353	0.600	8.800	7.660	1.140	40.7	300	5.44	50.0
ZStub S20	ZJ2.20	Z21	6.678	0.600	7.687	7.660	0.027	247.3	300	5.11	50.0
Z1.003	Z21	Z22	56.827	0.600	7.210	6.944	0.266	213.6	750	6.12	50.0
Z3.000 STUB S18	ZJ.35	Z22	40.557	0.600	7.330	7.094	0.236	171.9	600	5.36	50.0
ZStub S17	ZJ2.17	Z22	7.556	0.600	7.736	7.469	0.267	28.3	225	5.05	50.0
Z1.004	Z22	Z23	69.271	0.600	6.944	6.691	0.253	273.8	750	6.81	48.0
ZStub S15	ZJ2.15	Z23	14.205	0.600	7.300	7.216	0.084	169.1	225	5.24	50.0
ZStub S16	ZJ2.16	Z23	7.449	0.600	7.300	7.216	0.084	88.7	225	5.09	50.0
Z1.005	Z23	S33	71.006	0.600	6.691	6.537	0.154	461.1	750	7.72	45.0
ZStub S13	ZJ2.13	Z25	7.870	0.600	7.170	7.110	0.060	131.2	150	5.15	50.0
Z1.007	Z25	S18	15.409	0.600	6.510	6.490	0.020	770.5	750	8.20	43.7
Z4	Z26	Z27	24.756	0.600	8.100	7.976	0.124	199.6	375	5.32	50.0
Z4.001	Z27	Z28	11.332	0.600	7.976	7.929	0.047	241.1	375	5.49	50.0
Z4.002 Stub 10	Z28	Z30	31.597	0.600	7.910	7.880	0.030	1053.2	450	6.34	49.7
ZStub 8	ZJ2.8	Z29	9.473	0.600	8.469	8.375	0.094	100.8	150	5.16	50.0
ZStub 7	ZJ2.7	Z29	7.743	0.600	8.452	8.375	0.077	100.6	150	5.13	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
Z1	1.168	129.0	0.0	1.130	1.402	0.000	0.0	0	0.000
Z1.001	1.162	128.3	0.0	1.402	1.628	0.000	0.0	0	0.000
Z1.002 STUB S19	2.668	294.7	14.5	1.629	1.868	0.107	0.0	56	1.409
Z2	2.472	174.8	30.5	1.190	1.868	0.225	0.0	84	1.869
ZStub S20	0.995	70.3	24.0	1.943	1.868	0.177	0.0	120	0.902
Z1.003	1.910	844.0	79.6	1.868	1.510	0.587	0.0	153	1.223
Z3.000 STUB S18	1.854	524.3	32.5	1.447	1.510	0.240	0.0	100	1.051
ZStub S17	2.468	98.1	5.1	1.139	1.510	0.038	0.0	35	1.315
Z1.004	1.686	744.8	124.2	1.510	1.758	0.955	0.0	205	1.267
ZStub S15	1.002	39.9	12.9	1.875	1.758	0.095	0.0	87	0.894
ZStub S16	1.389	55.2	10.8	1.675	1.758	0.080	0.0	67	1.083
Z1.005	1.296	572.7	151.5	1.758	1.690	1.242	0.0	262	1.103
ZStub S13	0.876	15.5	1.8	1.880	1.801	0.013	0.0	34	0.583
Z1.007	1.000	441.8	171.0	1.801	1.915	1.444	0.0	323	0.939
Z4	1.278	141.2	27.5	1.033	1.399	0.203	0.0	112	0.999
Z4.001	1.162	128.4	35.5	1.399	1.476	0.262	0.0	134	0.999
Z4.002 Stub 10	0.618	98.3	45.4	1.420	1.167	0.337	0.0	215	0.606
ZStub 8	1.001	17.7	3.0	1.381	1.271	0.022	0.0	42	0.748
ZStub 7	1.002	17.7	3.3	1.398	1.271	0.024	0.0	44	0.767

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
Z5	Z29	Z30	37.247	0.600	8.300	8.105	0.195	191.0	225	5.82	50.0
ZStub 11	ZJ2.11	Z30	12.796	0.600	8.270	8.180	0.090	142.2	150	5.25	50.0
ZStub 9	ZJ2.9	Z30	7.707	0.600	8.280	8.180	0.100	77.1	150	5.11	50.0
Z4.003	Z30	S18	30.195	0.600	7.880	6.779	1.101	27.4	450	6.47	49.3
ZStub S12	ZJ2.12	S18	8.474	0.600	7.174	7.081	0.093	91.1	150	5.13	50.0
ZSTUB S13A	ZJ2.13A	S33	11.356	0.600	7.227	7.137	0.090	126.2	150	5.21	50.0
ZSTUB S20A	ZJ2.20A	Z20	7.394	0.600	8.910	8.867	0.043	172.0	225	5.12	50.0
1.000	S18	S21	53.852	0.600	6.479	6.370	0.109	494.1	750	8.92	41.7
2.000	S19	S21	46.641	0.600	8.490	6.893	1.597	29.2	225	5.32	50.0
3.000	S20	S21	22.497	0.600	7.880	6.893	0.987	22.8	225	5.14	50.0
1.001	S21	S24	54.660	0.600	6.370	6.265	0.105	520.6	750	9.67	39.9
4.000	S22	S24	56.611	0.600	8.200	6.788	1.412	40.1	225	5.46	50.0
5.000	S23	S24	29.349	0.600	7.770	6.788	0.982	29.9	225	5.20	50.0
1.002	S24	S29	58.397	0.600	6.265	6.150	0.115	507.8	750	10.45	38.2
6.000	S25	S45	23.951	0.600	6.905	6.755	0.150	159.7	300	5.32	50.0
6.001	S45	S26	13.504	0.600	6.755	6.670	0.085	158.9	300	5.50	50.0
6.002	S26	S29	11.605	0.600	6.670	6.600	0.070	165.8	300	5.66	50.0
7.000	S27	S28	35.415	0.600	6.950	6.710	0.240	147.6	225	5.55	50.0
7.001	S28	S29	4.612	0.600	6.710	6.675	0.035	131.8	225	5.62	50.0
1.003	S29	S30	36.475	0.600	6.150	6.080	0.070	521.1	750	10.95	37.1
S1.000	S31	S32	36.954	0.600	7.400	7.230	0.170	217.4	300	5.58	50.0
S1.001	S32	S33	14.905	0.600	7.230	6.987	0.243	61.3	300	5.70	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
Z5	0.942	37.5	16.0	1.271	1.167	0.118	0.0	102	0.905
ZStub 11	0.841	14.9	5.7	1.280	1.167	0.042	0.0	64	0.784
ZStub 9	1.146	20.3	9.9	1.170	1.167	0.073	0.0	74	1.140
Z4.003	3.893	619.2	81.6	1.167	1.926	0.611	0.0	109	2.735
ZStub S12	1.053	18.6	6.0	1.976	1.924	0.044	0.0	58	0.938
ZSTUB S13A	0.893	15.8	7.6	1.700	1.690	0.056	0.0	74	0.886
ZSTUB S20A	0.994	39.5	23.3	1.255	1.198	0.172	0.0	124	1.034
1.000	1.252	553.1	244.0	1.926	2.480	2.159	0.0	348	1.214
2.000	2.430	96.6	9.5	1.131	2.482	0.070	0.0	47	1.552
3.000	2.752	109.4	3.7	1.276	2.482	0.027	0.0	28	1.275
1.001	1.219	538.7	255.2	2.480	1.941	2.360	0.0	363	1.203
4.000	2.072	82.4	13.8	1.429	1.943	0.102	0.0	62	1.547
5.000	2.402	95.5	9.5	1.305	1.943	0.070	0.0	48	1.551
1.002	1.235	545.5	280.4	1.941	2.025	2.708	0.0	381	1.243
6.000	1.241	87.7	9.9	1.208	1.624	0.073	0.0	68	0.830
6.001	1.244	88.0	9.9	1.624	1.866	0.073	0.0	68	0.832
6.002	1.218	86.1	16.4	1.866	2.025	0.121	0.0	88	0.943
7.000	1.074	42.7	8.1	1.329	2.010	0.060	0.0	66	0.831
7.001	1.137	45.2	9.6	2.010	2.025	0.071	0.0	70	0.905
1.003	1.219	538.4	292.3	2.025	0.170	2.907	0.0	394	1.243
S1.000	1.062	75.1	6.5	1.279	1.701	0.048	0.0	59	0.658
S1.001	2.011	142.1	14.8	1.701	1.690	0.109	0.0	65	1.313

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
Z1.006	S33	Z25	13.495	0.600	6.537	6.519	0.018	749.7	750	7.94	44.3

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
Z1.006	1.014	448.0	168.9	1.690	1.792	1.407	0.0	318	0.946

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	30.0		

Storm Durations

15	30	60	120	240	360	480	960	1440	10080

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	20	0	0
100	45	0	0

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Z17	1	8.250	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Z18	1	8.181	0.000	0.0	0.0000	0.0000	OK
15 minute winter	Z19	10	8.156	0.046	9.6	0.1406	0.0000	OK
15 minute winter	Z20	11	8.869	0.069	19.7	0.1506	0.0000	OK
15 minute winter	Z21	11	7.332	0.122	50.8	0.3243	0.0000	OK
15 minute winter	Z22	11	7.108	0.164	82.6	0.7655	0.0000	OK
15 minute winter	Z23	12	6.903	0.212	106.2	0.8218	0.0000	OK
15 minute winter	Z25	13	6.802	0.292	112.8	0.8250	0.0000	OK
15 minute winter	Z26	10	8.190	0.090	18.2	0.4886	0.0000	OK
15 minute winter	Z27	11	8.095	0.119	23.1	0.2533	0.0000	OK
15 minute winter	Z28	11	8.056	0.146	29.3	0.3405	0.0000	OK
15 minute winter	Z29	11	8.381	0.081	10.4	0.2092	0.0000	OK
15 minute winter	Z30	11	7.972	0.092	53.4	0.2008	0.0000	OK
15 minute winter	ZJ.35	11	7.412	0.082	21.5	0.4322	0.0000	OK
15 minute winter	ZJ2.20	10	7.791	0.104	15.8	0.3631	0.0000	OK
15 minute winter	ZJ2.17	10	7.766	0.030	3.4	0.0580	0.0000	OK
15 minute winter	ZJ2.15	10	7.373	0.073	8.5	0.1806	0.0000	OK
15 minute winter	ZJ2.16	10	7.358	0.058	7.2	0.1388	0.0000	OK
15 minute winter	ZJ2.13	10	7.199	0.029	1.2	0.0377	0.0000	OK
15 minute winter	ZJ2.8	10	8.504	0.035	2.0	0.0543	0.0000	OK
15 minute winter	ZJ2.7	10	8.488	0.036	2.1	0.0573	0.0000	OK
15 minute winter	ZJ2.11	10	8.322	0.052	3.8	0.1055	0.0000	OK
15 minute winter	ZJ2.12	10	7.223	0.049	3.9	0.0851	0.0000	OK
15 minute winter	ZJ2.13A	10	7.287	0.060	5.0	0.1220	0.0000	OK
15 minute winter	ZJ2.20A	10	9.014	0.104	15.4	0.4820	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	Z17	Z1	Z18	0.0	0.000	0.000	0.0000	
15 minute summer	Z18	Z1.001	Z19	0.0	0.000	0.000	0.0615	
15 minute winter	Z19	Z1.002 STUB S19	Z21	9.3	1.215	0.032	0.1863	
15 minute winter	Z20	Z2	Z21	19.6	1.640	0.112	0.5534	
15 minute winter	Z21	Z1.003	Z22	51.0	0.884	0.060	3.3404	
15 minute winter	Z22	Z1.004	Z23	81.7	0.965	0.110	5.9291	
15 minute winter	Z23	Z1.005	S33	103.4	0.825	0.180	9.0462	
15 minute winter	Z25	Z1.007	S18	113.8	0.737	0.258	2.3950	
15 minute winter	Z26	Z4	Z27	17.8	0.719	0.126	0.6159	
15 minute winter	Z27	Z4.001	Z28	23.0	0.732	0.179	0.3557	
15 minute winter	Z28	Z4.002 Stub 10	Z30	29.8	0.893	0.303	1.0675	
15 minute winter	Z29	Z5	Z30	10.2	0.800	0.271	0.4728	
15 minute winter	Z30	Z4.003	S18	53.3	2.375	0.086	0.6779	
15 minute winter	ZJ.35	Z3.000 STUB S18	Z22	20.8	0.919	0.040	0.9167	
15 minute winter	ZJ2.20	ZStub S20	Z21	15.5	0.765	0.220	0.1354	
15 minute winter	ZJ2.17	ZStub S17	Z22	3.4	1.127	0.034	0.0225	
15 minute winter	ZJ2.15	ZStub S15	Z23	8.3	0.776	0.207	0.1517	
15 minute winter	ZJ2.16	ZStub S16	Z23	7.1	0.917	0.128	0.0573	
15 minute winter	ZJ2.13	ZStub S13	Z25	1.1	0.506	0.074	0.0179	
15 minute winter	ZJ2.8	ZStub 8	Z29	1.9	0.648	0.110	0.0285	
15 minute winter	ZJ2.7	ZStub 7	Z29	2.1	0.655	0.116	0.0243	
15 minute winter	ZJ2.11	ZStub 11	Z30	3.6	0.684	0.245	0.0683	
15 minute winter	ZJ2.12	ZStub S12	S18	3.8	0.805	0.206	0.0403	
15 minute winter	ZJ2.13A	ZSTUB S13A	S33	4.9	0.768	0.308	0.0720	
15 minute winter	ZJ2.20A	ZSTUB S20A	Z20	15.0	0.884	0.379	0.1256	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S18	13	6.774	0.295	164.6	0.7190	0.0000	OK
15 minute winter	S19	11	8.528	0.038	6.3	0.1273	0.0000	OK
15 minute winter	S20	10	7.903	0.023	2.4	0.0532	0.0000	OK
15 minute winter	S21	13	6.678	0.308	176.0	1.3648	0.0000	OK
15 minute winter	S22	11	8.250	0.050	9.1	0.1803	0.0000	OK
15 minute winter	S23	10	7.809	0.039	6.3	0.1227	0.0000	OK
15 minute winter	S24	14	6.582	0.317	191.5	1.7190	0.0000	OK
15 minute winter	S25	10	6.961	0.056	6.5	0.1611	0.0000	OK
15 minute winter	S45	11	6.809	0.054	6.4	0.0614	0.0000	OK
15 minute winter	S26	11	6.744	0.074	10.5	0.1551	0.0000	OK
15 minute winter	S27	10	7.003	0.053	5.4	0.1550	0.0000	OK
15 minute winter	S28	11	6.771	0.061	6.2	0.0779	0.0000	OK
15 minute winter	S29	14	6.455	0.305	199.5	1.0795	0.0000	OK
15 minute winter	S30	14	6.350	0.270	199.5	0.0000	0.0000	OK
15 minute winter	S31	11	7.447	0.047	4.3	0.1106	0.0000	OK
15 minute winter	S32	11	7.284	0.054	9.6	0.1101	0.0000	OK
15 minute winter	S33	13	6.827	0.290	116.2	0.7371	0.0000	OK
15 minute winter	ZJ2.9	10	8.342	0.062	6.5	0.1730	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S18	1.000	S21	164.7	1.001	0.298	8.9062	
15 minute winter	S19	2.000	S21	6.0	1.358	0.063	0.2078	
15 minute winter	S20	3.000	S21	2.3	1.112	0.021	0.0475	
15 minute winter	S21	1.001	S24	171.9	0.999	0.319	9.4149	
15 minute winter	S22	4.000	S24	8.8	1.355	0.106	0.3665	
15 minute winter	S23	5.000	S24	6.1	1.343	0.064	0.1334	
15 minute winter	S24	1.002	S29	189.3	1.098	0.347	10.0680	
15 minute winter	S25	6.000	S45	6.4	0.729	0.073	0.2100	
15 minute winter	S45	6.001	S26	6.4	0.581	0.073	0.1495	
15 minute winter	S26	6.002	S29	10.5	0.808	0.122	0.1505	
15 minute winter	S27	7.000	S28	5.2	0.675	0.122	0.2784	
15 minute winter	S28	7.001	S29	6.2	0.758	0.137	0.0376	
15 minute winter	S29	1.003	S30	199.5	1.288	0.371	5.6672	119.5
15 minute winter	S31	S1.000	S32	4.1	0.526	0.055	0.2887	
15 minute winter	S32	S1.001	S33	9.4	1.125	0.066	0.1242	
15 minute winter	S33	Z1.006	Z25	110.8	0.718	0.247	2.0826	
15 minute winter	ZJ2.9	ZStub 9	Z30	6.4	0.973	0.315	0.0505	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Z17	1	8.250	0.000	0.0	0.0000	0.0000	OK
15 minute winter	Z18	10	8.207	0.026	0.9	0.0371	0.0000	OK
15 minute winter	Z19	10	8.205	0.095	39.9	0.2892	0.0000	OK
15 minute winter	Z20	11	8.949	0.149	81.8	0.3271	0.0000	OK
15 minute winter	Z21	13	7.493	0.283	212.7	0.7526	0.0000	OK
15 minute winter	Z22	13	7.500	0.556	348.7	2.5904	0.0000	OK
15 minute winter	Z23	13	7.480	0.789	424.8	3.0633	0.0000	SURCHARGED
15 minute winter	Z25	12	7.404	0.894	409.6	2.5267	0.0000	SURCHARGED
15 minute winter	Z26	10	8.321	0.221	75.7	1.2035	0.0000	OK
15 minute winter	Z27	10	8.264	0.288	95.8	0.6130	0.0000	OK
15 minute winter	Z28	10	8.202	0.292	122.0	0.6809	0.0000	OK
15 minute winter	Z29	11	8.531	0.231	43.6	0.5957	0.0000	SURCHARGED
15 minute winter	Z30	11	8.062	0.182	218.8	0.3988	0.0000	OK
15 minute winter	ZJ.35	10	7.504	0.174	89.5	0.9171	0.0000	OK
15 minute winter	ZJ2.20	10	7.929	0.242	66.0	0.8466	0.0000	OK
15 minute winter	ZJ2.17	10	7.798	0.062	14.2	0.1226	0.0000	OK
15 minute winter	ZJ2.15	13	7.524	0.224	35.4	0.5562	0.0000	OK
15 minute winter	ZJ2.16	13	7.499	0.199	29.8	0.4760	0.0000	OK
15 minute winter	ZJ2.13	12	7.433	0.263	15.1	0.3485	0.0000	SURCHARGED
15 minute winter	ZJ2.8	11	8.542	0.073	8.2	0.1135	0.0000	OK
15 minute winter	ZJ2.7	11	8.544	0.092	8.9	0.1469	0.0000	OK
15 minute winter	ZJ2.11	11	8.408	0.138	15.7	0.2785	0.0000	OK
15 minute winter	ZJ2.12	12	7.451	0.277	16.4	0.4861	0.0000	SURCHARGED
15 minute winter	ZJ2.13A	12	7.551	0.324	20.9	0.6607	0.0000	SURCHARGED
15 minute winter	ZJ2.20A	10	9.244	0.334	64.1	1.5435	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	Z17	Z1	Z18	0.0	0.000	0.000	0.0235	
15 minute winter	Z18	Z1.001	Z19	-0.9	-0.097	-0.007	0.2108	
15 minute winter	Z19	Z1.002 STUB S19	Z21	38.5	1.820	0.131	0.5163	
15 minute winter	Z20	Z2	Z21	81.4	2.401	0.466	1.5722	
15 minute winter	Z21	Z1.003	Z22	215.8	1.214	0.256	14.2624	
15 minute winter	Z22	Z1.004	Z23	318.9	1.209	0.428	27.3698	
15 minute winter	Z23	Z1.005	S33	368.9	0.944	0.644	31.2512	
15 minute winter	Z25	Z1.007	S18	415.6	0.951	0.941	6.7818	
15 minute winter	Z26	Z4	Z27	73.8	0.928	0.522	1.9583	
15 minute winter	Z27	Z4.001	Z28	94.8	1.074	0.739	1.0011	
15 minute winter	Z28	Z4.002 Stub 10	Z30	122.6	1.451	1.248	2.6653	
15 minute winter	Z29	Z5	Z30	40.7	1.112	1.087	1.3376	
15 minute winter	Z30	Z4.003	S18	219.3	3.016	0.354	3.2984	
15 minute winter	ZJ.35	Z3.000 STUB S18	Z22	88.2	1.212	0.168	5.3903	
15 minute winter	ZJ2.20	ZStub S20	Z21	65.2	1.174	0.926	0.3691	
15 minute winter	ZJ2.17	ZStub S17	Z22	14.1	1.666	0.143	0.0639	
15 minute winter	ZJ2.15	ZStub S15	Z23	34.6	1.097	0.869	0.5646	
15 minute winter	ZJ2.16	ZStub S16	Z23	33.7	1.311	0.611	0.2865	
15 minute winter	ZJ2.13	ZStub S13	Z25	-10.5	0.744	-0.676	0.1385	
15 minute winter	ZJ2.8	ZStub 8	Z29	8.1	0.793	0.459	0.1234	
15 minute winter	ZJ2.7	ZStub 7	Z29	8.6	0.808	0.489	0.1120	
15 minute winter	ZJ2.11	ZStub 11	Z30	15.1	0.956	1.018	0.2006	
15 minute winter	ZJ2.12	ZStub S12	S18	16.1	1.120	0.864	0.1492	
15 minute winter	ZJ2.13A	ZSTUB S13A	S33	19.7	1.125	1.248	0.1999	
15 minute winter	ZJ2.20A	ZSTUB S20A	Z20	62.0	1.559	1.568	0.2860	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S18	12	7.379	0.900	564.3	2.1971	0.0000	SURCHARGED
15 minute winter	S19	10	8.569	0.079	26.1	0.2631	0.0000	OK
15 minute winter	S20	10	7.926	0.046	10.1	0.1058	0.0000	OK
15 minute winter	S21	12	7.250	0.880	601.4	3.8985	0.0000	SURCHARGED
15 minute winter	S22	10	8.308	0.108	38.0	0.3905	0.0000	OK
15 minute winter	S23	10	7.851	0.081	26.1	0.2529	0.0000	OK
15 minute winter	S24	12	7.071	0.806	709.2	4.3745	0.0000	SURCHARGED
15 minute winter	S25	10	7.024	0.119	27.2	0.3443	0.0000	OK
15 minute winter	S45	11	6.879	0.124	26.8	0.1405	0.0000	OK
15 minute winter	S26	12	6.854	0.184	44.1	0.3856	0.0000	OK
15 minute winter	S27	10	7.067	0.117	22.4	0.3411	0.0000	OK
15 minute winter	S28	12	6.859	0.149	26.1	0.1909	0.0000	OK
15 minute winter	S29	12	6.830	0.680	770.3	2.4073	0.0000	OK
15 minute winter	S30	12	6.627	0.547	775.2	0.0000	0.0000	OK
15 minute winter	S31	10	7.499	0.099	17.9	0.2311	0.0000	OK
15 minute winter	S32	12	7.476	0.246	40.2	0.5026	0.0000	OK
15 minute winter	S33	12	7.424	0.887	392.3	2.2581	0.0000	SURCHARGED
15 minute winter	ZJ2.9	11	8.548	0.268	27.2	0.7473	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S18	1.000	S21	548.8	1.247	0.992	23.7014	
15 minute winter	S19	2.000	S21	26.0	1.972	0.269	1.2100	
15 minute winter	S20	3.000	S21	10.0	1.651	0.092	0.5105	
15 minute winter	S21	1.001	S24	605.6	1.376	1.124	24.0570	
15 minute winter	S22	4.000	S24	37.3	1.932	0.453	1.6332	
15 minute winter	S23	5.000	S24	26.5	1.951	0.277	0.7625	
15 minute winter	S24	1.002	S29	707.0	1.609	1.296	25.1056	
15 minute winter	S25	6.000	S45	26.8	0.999	0.305	0.6417	
15 minute winter	S45	6.001	S26	26.6	0.781	0.303	0.4750	
15 minute winter	S26	6.002	S29	43.0	1.160	0.500	0.5994	
15 minute winter	S27	7.000	S28	22.0	0.953	0.515	0.8169	
15 minute winter	S28	7.001	S29	25.9	1.094	0.573	0.1318	
15 minute winter	S29	1.003	S30	775.2	2.011	1.440	13.9256	499.2
15 minute winter	S31	S1.000	S32	17.5	0.789	0.233	1.4693	
15 minute winter	S32	S1.001	S33	39.3	1.587	0.277	0.9850	
15 minute winter	S33	Z1.006	Z25	405.1	0.923	0.904	5.9394	
15 minute winter	ZJ2.9	ZStub 9	Z30	26.0	1.476	1.283	0.1337	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Z17	13	8.611	0.361	71.1	0.5162	0.0000	OK
15 minute winter	Z18	13	8.614	0.433	78.6	0.6190	0.0000	SURCHARGED
15 minute winter	Z19	13	8.671	0.561	81.9	1.7007	0.0000	SURCHARGED
15 minute winter	Z20	12	9.023	0.223	125.0	0.4902	0.0000	OK
15 minute winter	Z21	13	8.653	1.443	328.1	3.8386	0.0000	SURCHARGED
15 minute winter	Z22	13	8.648	1.704	501.0	7.9381	0.0000	SURCHARGED
15 minute winter	Z23	13	8.547	1.856	545.1	7.2083	0.0000	SURCHARGED
15 minute winter	Z25	13	8.346	1.836	532.4	5.1894	0.0000	SURCHARGED
15 minute winter	Z26	13	8.656	0.556	116.8	3.0314	0.0000	SURCHARGED
15 minute winter	Z27	13	8.605	0.629	142.0	1.3381	0.0000	SURCHARGED
15 minute winter	Z28	13	8.555	0.645	181.9	1.5043	0.0000	SURCHARGED
15 minute winter	Z29	12	8.857	0.557	61.7	1.4346	0.0000	SURCHARGED
15 minute winter	Z30	13	8.493	0.613	324.2	1.3429	0.0000	SURCHARGED
15 minute winter	ZJ.35	13	8.673	1.343	138.1	7.0962	0.0000	SURCHARGED
15 minute winter	ZJ2.20	13	8.699	1.012	101.9	3.5383	0.0000	SURCHARGED
15 minute winter	ZJ2.17	13	8.650	0.914	21.9	1.7974	0.0000	SURCHARGED
15 minute winter	ZJ2.15	13	8.619	1.319	54.7	3.2811	0.0000	SURCHARGED
15 minute winter	ZJ2.16	13	8.586	1.286	65.6	3.0793	0.0000	SURCHARGED
15 minute winter	ZJ2.13	13	8.348	1.178	7.9	1.5583	0.0000	SURCHARGED
15 minute winter	ZJ2.8	12	8.889	0.420	12.7	0.6553	0.0000	SURCHARGED
15 minute winter	ZJ2.7	12	8.890	0.438	13.8	0.6993	0.0000	SURCHARGED
15 minute winter	ZJ2.11	13	8.624	0.354	24.2	0.7127	0.0000	SURCHARGED
15 minute winter	ZJ2.12	13	8.372	1.198	25.3	2.0986	0.0000	SURCHARGED
15 minute winter	ZJ2.13A	13	8.592	1.365	32.2	2.7838	0.0000	SURCHARGED
15 minute winter	ZJ2.20A	11	9.484	0.574	99.0	2.6506	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	Z17	Z1	Z18	-71.1	-0.689	-0.551	1.8045	
15 minute winter	Z18	Z1.001	Z19	-78.6	-0.713	-0.612	1.8620	
15 minute winter	Z19	Z1.002 STUB S19	Z21	96.5	2.042	0.327	2.6818	
15 minute winter	Z20	Z2	Z21	122.2	2.611	0.699	2.9339	
15 minute winter	Z21	Z1.003	Z22	314.5	1.276	0.373	25.0107	
15 minute winter	Z22	Z1.004	Z23	394.9	1.236	0.530	30.4876	
15 minute winter	Z23	Z1.005	S33	466.0	1.059	0.814	31.2512	
15 minute winter	Z25	Z1.007	S18	541.5	1.231	1.226	6.7818	
15 minute winter	Z26	Z4	Z27	110.0	0.997	0.779	2.7305	
15 minute winter	Z27	Z4.001	Z28	141.3	1.281	1.101	1.2499	
15 minute winter	Z28	Z4.002 Stub 10	Z30	180.2	1.534	1.834	5.0063	
15 minute winter	Z29	Z5	Z30	59.2	1.491	1.580	1.4814	
15 minute winter	Z30	Z4.003	S18	311.3	3.078	0.503	4.7842	
15 minute winter	ZJ.35	Z3.000 STUB S18	Z22	126.3	1.242	0.241	11.4240	
15 minute winter	ZJ2.20	ZStub S20	Z21	100.8	1.451	1.433	0.4703	
15 minute winter	ZJ2.17	ZStub S17	Z22	23.0	1.819	0.234	0.3005	
15 minute winter	ZJ2.15	ZStub S15	Z23	50.6	1.272	1.269	0.5649	
15 minute winter	ZJ2.16	ZStub S16	Z23	45.4	1.408	0.822	0.2963	
15 minute winter	ZJ2.13	ZStub S13	Z25	9.7	0.763	0.629	0.1385	
15 minute winter	ZJ2.8	ZStub 8	Z29	10.7	0.804	0.605	0.1668	
15 minute winter	ZJ2.7	ZStub 7	Z29	11.8	0.821	0.665	0.1363	
15 minute winter	ZJ2.11	ZStub 11	Z30	23.1	1.314	1.556	0.2253	
15 minute winter	ZJ2.12	ZStub S12	S18	17.8	1.118	0.959	0.1492	
15 minute winter	ZJ2.13A	ZSTUB S13A	S33	24.3	1.381	1.541	0.1999	
15 minute winter	ZJ2.20A	ZSTUB S20A	Z20	95.4	2.398	2.414	0.2911	

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S18	13	8.278	1.799	805.6	4.3886	0.0000	SURCHARGED
15 minute winter	S19	10	8.590	0.100	40.3	0.3320	0.0000	OK
15 minute winter	S20	13	8.003	0.123	15.5	0.2845	0.0000	OK
15 minute winter	S21	12	7.964	1.594	879.8	7.0619	0.0000	SURCHARGED
15 minute winter	S22	11	8.344	0.144	58.7	0.5198	0.0000	OK
15 minute winter	S23	10	7.871	0.101	40.3	0.3170	0.0000	OK
15 minute winter	S24	12	7.596	1.331	1011.1	7.2211	0.0000	SURCHARGED
15 minute winter	S25	13	7.139	0.234	42.0	0.6745	0.0000	OK
15 minute winter	S45	12	7.125	0.370	43.2	0.4188	0.0000	SURCHARGED
15 minute winter	S26	12	7.114	0.444	61.2	0.9301	0.0000	SURCHARGED
15 minute winter	S27	12	7.197	0.247	34.5	0.7211	0.0000	SURCHARGED
15 minute winter	S28	12	7.106	0.396	38.0	0.5068	0.0000	SURCHARGED
15 minute winter	S29	12	7.079	0.929	1085.7	3.2861	0.0000	SURCHARGED
15 minute winter	S30	13	6.719	0.639	1088.4	0.0000	0.0000	OK
15 minute winter	S31	12	8.511	1.111	71.7	2.6042	0.0000	SURCHARGED
15 minute winter	S32	12	8.432	1.202	63.7	2.4584	0.0000	SURCHARGED
15 minute winter	S33	13	8.406	1.869	520.5	4.7578	0.0000	SURCHARGED
15 minute winter	ZJ2.9	11	8.845	0.565	42.0	1.5758	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S18	1.000	S21	807.2	1.834	1.459	23.7014	
15 minute winter	S19	2.000	S21	39.8	2.083	0.412	1.3254	
15 minute winter	S20	3.000	S21	15.4	1.755	0.141	0.6978	
15 minute winter	S21	1.001	S24	881.3	2.003	1.636	24.0570	
15 minute winter	S22	4.000	S24	56.6	2.023	0.687	1.8833	
15 minute winter	S23	5.000	S24	40.0	2.063	0.418	0.8367	
15 minute winter	S24	1.002	S29	1009.1	2.293	1.850	25.7017	
15 minute winter	S25	6.000	S45	43.2	1.059	0.492	1.5490	
15 minute winter	S45	6.001	S26	35.2	0.811	0.401	0.9509	
15 minute winter	S26	6.002	S29	57.8	1.230	0.671	0.8172	
15 minute winter	S27	7.000	S28	31.7	1.029	0.742	1.4085	
15 minute winter	S28	7.001	S29	38.3	1.157	0.848	0.1834	
15 minute winter	S29	1.003	S30	1088.4	2.489	2.022	15.3136	770.8
15 minute winter	S31	S1.000	S32	-44.1	0.843	-0.587	2.6023	
15 minute winter	S32	S1.001	S33	60.7	1.660	0.427	1.0496	
15 minute winter	S33	Z1.006	Z25	521.4	1.185	1.164	5.9394	
15 minute winter	ZJ2.9	ZStub 9	Z30	39.4	2.240	1.947	0.1357	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Z17	12	9.262	1.012	31.6	1.4477	0.0000	SURCHARGED
15 minute winter	Z18	12	9.266	1.085	93.4	1.5523	0.0000	SURCHARGED
15 minute winter	Z19	13	9.246	1.136	145.5	3.4457	0.0000	SURCHARGED
15 minute winter	Z20	12	9.771	0.971	149.6	2.1341	0.0000	SURCHARGED
15 minute winter	Z21	12	9.238	2.028	356.2	5.3972	0.0000	SURCHARGED
15 minute winter	Z22	12	9.204	2.260	595.7	10.5271	4.8165	FLOOD
15 minute winter	Z23	12	9.141	2.450	527.8	9.5142	0.0000	FLOOD RISK
15 minute winter	Z25	12	8.901	2.391	594.8	6.7591	0.0000	FLOOD RISK
15 minute winter	Z26	13	9.351	1.251	141.2	6.8235	0.0000	FLOOD RISK
15 minute winter	Z27	13	9.278	1.302	167.1	2.7719	0.0000	SURCHARGED
15 minute winter	Z28	13	9.205	1.295	208.6	3.0217	0.0000	SURCHARGED
15 minute winter	Z29	13	9.515	1.215	72.0	3.1279	0.0000	FLOOD RISK
15 minute winter	Z30	13	9.107	1.227	339.3	2.6894	0.0000	SURCHARGED
15 minute winter	ZJ.35	12	9.259	1.929	166.9	10.1934	0.0000	FLOOD RISK
15 minute winter	ZJ2.20	12	9.356	1.669	130.2	5.8382	0.0000	SURCHARGED
15 minute winter	ZJ2.17	12	9.100	1.364	93.0	2.6830	7.7884	FLOOD
15 minute winter	ZJ2.15	12	9.285	1.985	66.1	4.9392	0.0000	FLOOD RISK
15 minute winter	ZJ2.16	12	9.200	1.900	55.6	4.5486	0.4555	FLOOD
15 minute winter	ZJ2.13	12	8.915	1.745	13.4	2.3091	0.0000	FLOOD RISK
15 minute winter	ZJ2.8	13	9.553	1.084	15.3	1.6927	0.0000	SURCHARGED
15 minute winter	ZJ2.7	13	9.553	1.101	16.7	1.7569	0.0000	SURCHARGED
15 minute winter	ZJ2.11	13	9.295	1.025	29.2	2.0622	0.0000	SURCHARGED
15 minute winter	ZJ2.12	13	8.957	1.783	30.6	3.1246	0.0000	SURCHARGED
15 minute winter	ZJ2.13A	12	9.077	1.850	38.9	3.7722	1.2420	FLOOD
15 minute winter	ZJ2.20A	12	10.073	1.163	119.6	5.3680	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	Z17	Z1	Z18	-31.6	0.380	-0.245	1.8162	
15 minute winter	Z18	Z1.001	Z19	-91.2	1.020	-0.711	1.8620	
15 minute winter	Z19	Z1.002 STUB S19	Z21	-75.5	2.074	-0.256	2.6818	
15 minute winter	Z20	Z2	Z21	135.1	2.620	0.773	3.2641	
15 minute winter	Z21	Z1.003	Z22	350.2	1.269	0.415	25.0107	
15 minute winter	Z22	Z1.004	Z23	388.6	1.244	0.522	30.4876	
15 minute winter	Z23	Z1.005	S33	526.9	1.197	0.920	31.2512	
15 minute winter	Z25	Z1.007	S18	592.5	1.346	1.341	6.7818	
15 minute winter	Z26	Z4	Z27	126.2	1.144	0.893	2.7305	
15 minute winter	Z27	Z4.001	Z28	156.4	1.418	1.218	1.2499	
15 minute winter	Z28	Z4.002 Stub 10	Z30	185.7	1.470	1.889	5.0063	
15 minute winter	Z29	Z5	Z30	59.7	1.502	1.594	1.4814	
15 minute winter	Z30	Z4.003	S18	313.3	3.113	0.506	4.7842	
15 minute winter	ZJ.35	Z3.000 STUB S18	Z22	162.3	1.249	0.310	11.4240	
15 minute winter	ZJ2.20	ZStub S20	Z21	112.1	1.600	1.593	0.4703	
15 minute winter	ZJ2.17	ZStub S17	Z22	-66.6	1.905	-0.678	0.3005	
15 minute winter	ZJ2.15	ZStub S15	Z23	54.8	1.377	1.374	0.5649	
15 minute winter	ZJ2.16	ZStub S16	Z23	48.0	1.399	0.869	0.2963	
15 minute winter	ZJ2.13	ZStub S13	Z25	9.5	0.802	0.613	0.1385	
15 minute winter	ZJ2.8	ZStub 8	Z29	13.2	0.768	0.746	0.1668	
15 minute winter	ZJ2.7	ZStub 7	Z29	13.7	0.807	0.772	0.1363	
15 minute winter	ZJ2.11	ZStub 11	Z30	24.0	1.363	1.616	0.2253	
15 minute winter	ZJ2.12	ZStub S12	S18	20.8	1.180	1.117	0.1492	
15 minute winter	ZJ2.13A	ZSTUB S13A	S33	24.5	1.392	1.553	0.1999	
15 minute winter	ZJ2.20A	ZSTUB S20A	Z20	112.7	2.835	2.853	0.2941	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S18	12	8.818	2.339	904.3	5.7078	0.0000	SURCHARGED
15 minute winter	S19	12	8.634	0.144	48.7	0.4786	0.0000	OK
15 minute winter	S20	13	8.428	0.548	42.5	1.2632	0.0000	SURCHARGED
15 minute winter	S21	12	8.421	2.051	1001.2	9.0866	0.0000	SURCHARGED
15 minute winter	S22	12	8.593	0.393	70.9	1.4201	0.0000	SURCHARGED
15 minute winter	S23	13	8.063	0.293	48.7	0.9205	0.0000	SURCHARGED
15 minute winter	S24	12	7.937	1.672	1170.7	9.0703	0.0000	SURCHARGED
15 minute winter	S25	12	7.359	0.454	50.8	1.3097	0.0000	SURCHARGED
15 minute winter	S45	12	7.325	0.570	45.8	0.6446	0.0000	SURCHARGED
15 minute winter	S26	12	7.302	0.632	72.5	1.3245	0.0000	SURCHARGED
15 minute winter	S27	12	7.448	0.498	41.7	1.4552	0.0000	SURCHARGED
15 minute winter	S28	12	7.290	0.580	45.7	0.7419	0.0000	SURCHARGED
15 minute winter	S29	12	7.242	1.092	1269.4	3.8631	0.0000	SURCHARGED
15 minute winter	S30	13	6.755	0.675	1268.9	0.0000	0.0000	OK
15 minute winter	S31	12	8.979	1.579	33.4	3.6996	1.6764	FLOOD
15 minute winter	S32	12	9.002	1.772	98.0	3.6247	0.0000	FLOOD RISK
15 minute winter	S33	12	8.975	2.438	583.2	6.2042	0.0000	FLOOD RISK
15 minute winter	ZJ2.9	13	9.489	1.209	50.8	3.3724	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S18	1.000	S21	908.0	2.063	1.642	23.7014	
15 minute winter	S19	2.000	S21	46.4	2.003	0.481	1.5548	
15 minute winter	S20	3.000	S21	-24.8	1.690	-0.227	0.8947	
15 minute winter	S21	1.001	S24	1009.4	2.294	1.874	24.0570	
15 minute winter	S22	4.000	S24	66.8	2.116	0.810	2.2515	
15 minute winter	S23	5.000	S24	46.4	2.014	0.486	1.1672	
15 minute winter	S24	1.002	S29	1172.3	2.664	2.149	25.7017	
15 minute winter	S25	6.000	S45	45.8	1.076	0.521	1.6866	
15 minute winter	S45	6.001	S26	41.1	0.799	0.467	0.9509	
15 minute winter	S26	6.002	S29	67.1	1.213	0.779	0.8172	
15 minute winter	S27	7.000	S28	38.5	1.025	0.903	1.4085	
15 minute winter	S28	7.001	S29	39.3	1.139	0.870	0.1834	
15 minute winter	S29	1.003	S30	1268.9	2.886	2.357	15.6391	920.5
15 minute winter	S31	S1.000	S32	26.5	0.813	0.353	2.6023	
15 minute winter	S32	S1.001	S33	83.0	1.597	0.584	1.0496	
15 minute winter	S33	Z1.006	Z25	578.0	1.313	1.290	5.9394	
15 minute winter	ZJ2.9	ZStub 9	Z30	41.4	2.352	2.044	0.1357	

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Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	1	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	1.000
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S34	0.578	8.00	8.536	1500	558710.813	173171.829	1.856
S35	0.087	5.00	8.404	1500	558662.982	173176.184	1.864
S36	0.017	5.00	8.995	1500	558656.633	173240.211	1.495
S37	0.120	5.00	8.805	1500	558653.906	173209.331	1.665
S38	0.102	5.00	8.232	1500	558643.251	173184.449	1.912
S43	0.088	5.00	8.407	1500	558561.549	173221.385	1.607
S39	0.051	5.00	9.327	1500	558601.262	173234.390	1.627
S40	0.026	5.00	9.041	1500	558599.433	173210.304	1.791
S41	0.005	5.00	8.849	1500	558593.814	173205.738	2.699
S48	0.000		7.000	1500	558581.238	173175.849	1.000

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S34	S35	48.029	0.600	6.680	6.540	0.140	343.1	450	8.73	27.2
1.001	S35	S38	21.392	0.600	6.540	6.470	0.070	305.6	450	9.04	26.6
2.000	S36	S37	13.590	0.600	7.500	7.140	0.360	37.8	225	5.11	35.5
2.001	S37	S38	27.068	0.600	7.140	6.695	0.445	60.8	225	5.37	34.7
1.002	S38	S41	53.826	0.600	6.320	6.150	0.170	316.6	600	9.70	25.6
3.000	S43	S41	35.859	0.600	6.800	6.450	0.350	102.5	300	5.38	34.7
4.000	S39	S40	24.156	0.600	7.700	7.250	0.450	53.7	225	5.23	35.1
4.001	S40	S41	7.240	0.600	7.250	6.525	0.725	10.0	225	5.25	35.1
1.003	S41	S48	32.427	0.600	6.150	6.000	0.150	216.2	600	10.03	25.1

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.092	173.6	42.5	1.406	1.414	0.578	0.0	151	0.907
1.001	1.157	184.1	48.0	1.414	1.312	0.665	0.0	156	0.979
2.000	2.136	84.9	1.6	1.270	1.440	0.017	0.0	22	0.841
2.001	1.680	66.8	12.9	1.440	1.312	0.137	0.0	66	1.301
1.002	1.363	385.3	62.7	1.312	2.099	0.904	0.0	163	1.016
3.000	1.553	109.8	8.3	1.307	2.099	0.088	0.0	55	0.925
4.000	1.789	71.1	4.9	1.402	1.566	0.051	0.0	40	1.037
4.001	4.164	165.6	7.3	1.566	2.099	0.077	0.0	32	2.118
1.003	1.652	467.1	73.0	2.099	0.400	1.074	0.0	159	1.218

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Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	30.0		

Storm Durations

15	60	180	360	600	960	10080
30	120	240	480	720	1440	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	20	0	0
100	45	0	0

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S34	12	6.829	0.149	40.4	1.6592	0.0000	OK
15 minute winter	S35	12	6.701	0.161	46.4	0.5099	0.0000	OK
15 minute winter	S36	10	7.521	0.021	1.5	0.0435	0.0000	OK
15 minute winter	S37	10	7.205	0.065	12.2	0.2572	0.0000	OK
15 minute winter	S38	12	6.489	0.169	64.5	0.5692	0.0000	OK
15 minute winter	S43	11	6.854	0.054	7.9	0.1838	0.0000	OK
15 minute winter	S39	10	7.740	0.040	4.6	0.1087	0.0000	OK
15 minute winter	S40	10	7.282	0.032	6.8	0.0710	0.0000	OK
15 minute winter	S41	12	6.323	0.173	78.0	0.3153	0.0000	OK
15 minute winter	S48	12	6.163	0.163	78.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S34	1.000	S35	40.3	0.834	0.232	2.3253	
15 minute winter	S35	1.001	S38	46.2	0.965	0.251	1.0258	
15 minute winter	S36	2.000	S37	1.5	0.277	0.017	0.0773	
15 minute winter	S37	2.001	S38	11.8	1.258	0.177	0.2542	
15 minute winter	S38	1.002	S41	64.9	0.982	0.168	3.5571	
15 minute winter	S43	3.000	S41	7.6	0.897	0.069	0.3041	
15 minute winter	S39	4.000	S40	4.5	1.092	0.063	0.0997	
15 minute winter	S40	4.001	S41	6.7	1.992	0.040	0.0244	
15 minute winter	S41	1.003	S48	78.7	1.221	0.169	2.0900	44.3

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S34	12	7.073	0.393	168.2	4.3617	0.0000	OK
15 minute winter	S35	12	6.926	0.386	192.2	1.2235	0.0000	OK
15 minute winter	S36	10	7.541	0.041	6.3	0.0868	0.0000	OK
15 minute winter	S37	10	7.295	0.155	50.9	0.6074	0.0000	OK
15 minute winter	S38	11	6.723	0.403	273.0	1.3573	0.0000	OK
15 minute winter	S43	10	6.915	0.115	32.8	0.3905	0.0000	OK
15 minute winter	S39	10	7.783	0.083	19.0	0.2259	0.0000	OK
15 minute winter	S40	10	7.319	0.069	28.5	0.1526	0.0000	OK
15 minute winter	S41	11	6.553	0.403	331.6	0.7348	0.0000	OK
15 minute winter	S48	12	6.360	0.360	329.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S34	1.000	S35	166.9	1.155	0.961	7.0016	
15 minute winter	S35	1.001	S38	192.5	1.464	1.046	2.7918	
15 minute winter	S36	2.000	S37	6.2	0.381	0.074	0.2313	
15 minute winter	S37	2.001	S38	49.6	1.787	0.743	0.7540	
15 minute winter	S38	1.002	S41	270.6	1.357	0.702	10.8340	
15 minute winter	S43	3.000	S41	31.9	1.336	0.290	0.8599	
15 minute winter	S39	4.000	S40	18.8	1.584	0.264	0.2867	
15 minute winter	S40	4.001	S41	28.2	2.918	0.170	0.0701	
15 minute winter	S41	1.003	S48	329.6	1.749	0.706	6.1160	184.5

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S34	12	7.581	0.901	259.5	10.0053	0.0000	SURCHARGED
15 minute winter	S35	12	7.208	0.668	291.9	2.1155	0.0000	SURCHARGED
15 minute winter	S36	10	7.551	0.051	9.8	0.1079	0.0000	OK
15 minute winter	S37	11	7.532	0.392	78.7	1.5390	0.0000	SURCHARGED
15 minute winter	S38	12	6.943	0.623	407.8	2.0990	0.0000	SURCHARGED
15 minute winter	S43	10	6.944	0.144	50.6	0.4918	0.0000	OK
15 minute winter	S39	10	7.808	0.108	29.3	0.2924	0.0000	OK
15 minute winter	S40	9	7.335	0.085	43.8	0.1869	0.0000	OK
15 minute winter	S41	12	6.719	0.569	496.1	1.0378	0.0000	OK
15 minute winter	S48	12	6.460	0.460	492.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S34	1.000	S35	262.7	1.658	1.513	7.6099	
15 minute winter	S35	1.001	S38	294.3	1.858	1.599	3.3894	
15 minute winter	S36	2.000	S37	9.7	0.392	0.114	0.3163	
15 minute winter	S37	2.001	S38	71.5	1.798	1.070	1.0765	
15 minute winter	S38	1.002	S41	409.4	1.461	1.062	15.0185	
15 minute winter	S43	3.000	S41	51.4	1.342	0.468	1.7595	
15 minute winter	S39	4.000	S40	28.9	1.849	0.406	0.3803	
15 minute winter	S40	4.001	S41	44.0	3.141	0.266	0.1753	
15 minute winter	S41	1.003	S48	492.6	1.915	1.055	8.2412	284.7

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S34	12	8.082	1.402	313.6	15.5715	0.0000	SURCHARGED
15 minute winter	S35	12	7.558	1.018	349.1	3.2225	0.0000	SURCHARGED
15 minute winter	S36	12	7.920	0.420	11.8	0.8848	0.0000	SURCHARGED
15 minute winter	S37	12	7.910	0.770	89.3	3.0248	0.0000	SURCHARGED
15 minute winter	S38	12	7.181	0.861	480.2	2.8993	0.0000	SURCHARGED
15 minute winter	S43	9	6.958	0.158	61.2	0.5381	0.0000	OK
15 minute winter	S39	10	7.822	0.122	35.5	0.3302	0.0000	OK
15 minute summer	S40	9	7.339	0.089	50.5	0.1963	0.0000	OK
15 minute winter	S41	12	6.843	0.693	578.0	1.2640	0.0000	SURCHARGED
15 minute winter	S48	12	6.496	0.496	579.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S34	1.000	S35	314.4	1.985	1.811	7.6099	
15 minute winter	S35	1.001	S38	354.0	2.234	1.923	3.3894	
15 minute winter	S36	2.000	S37	18.4	0.576	0.216	0.5405	
15 minute winter	S37	2.001	S38	77.7	1.953	1.163	1.0765	
15 minute winter	S38	1.002	S41	481.3	1.709	1.249	15.1616	
15 minute winter	S43	3.000	S41	60.5	1.410	0.551	1.9325	
15 minute winter	S39	4.000	S40	35.1	1.937	0.494	0.4382	
15 minute summer	S40	4.001	S41	50.4	3.072	0.304	0.1928	
15 minute winter	S41	1.003	S48	579.8	2.083	1.241	8.6051	344.1

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Define.

LEGEND

Reserved Matters Application Boundary

A Drawing amended to reflect EDC/CSA comments 08.12.25

Rev	Description	Date
	A	Rev
	DE_229_P10_002	Drg No
	Camland	Client
	Parcel 10 PH4 RM Landscape	Project
	General Arrangement	Title
	1:750 @ A1	Scale

SCALE 1:750
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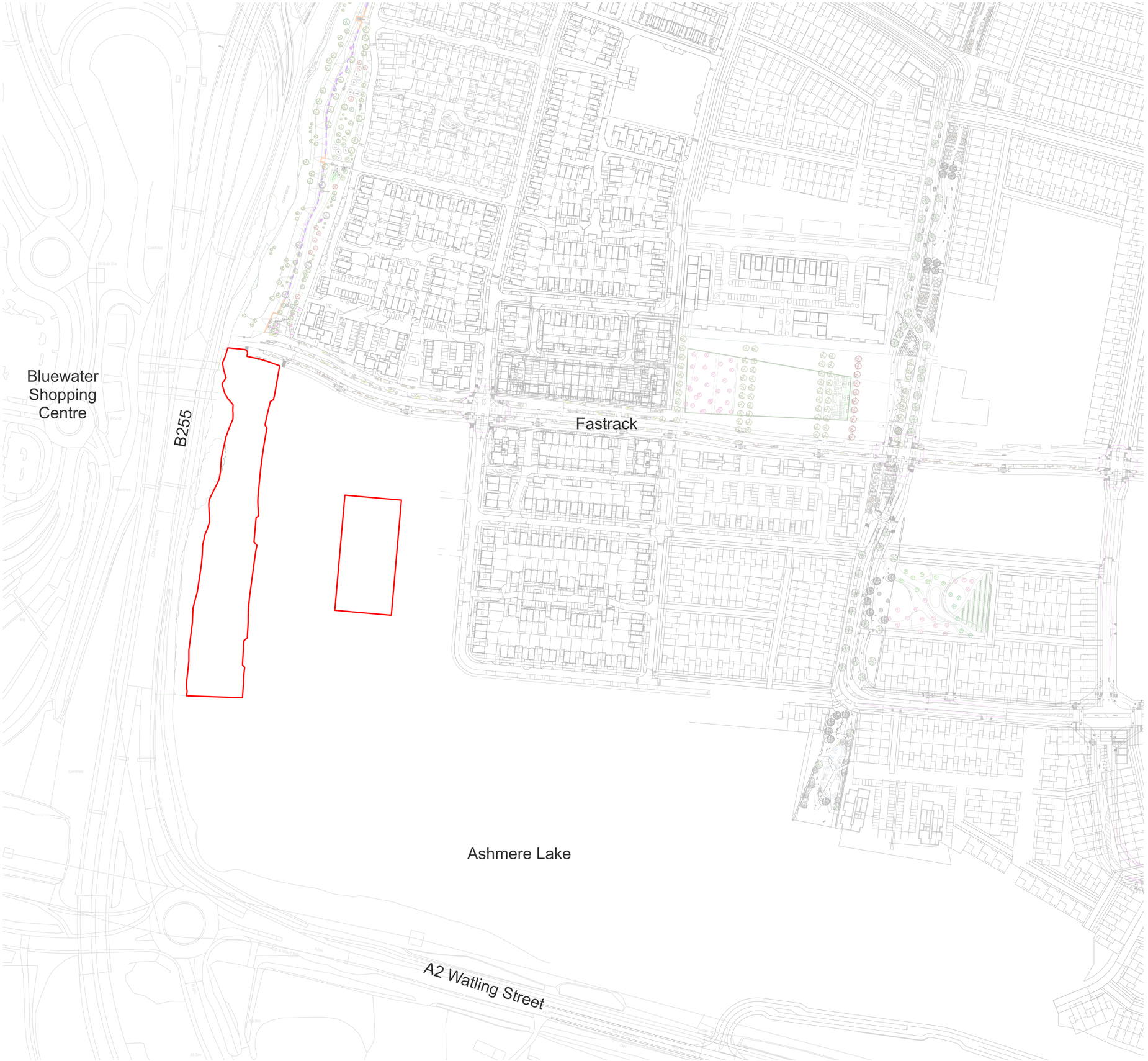
N

Define.



LEGEND

Reserved Matters Application Boundary

Rev	Description	Date
A	Drawing amended to reflect EDC/CSA comments	08.12.25

A	Rev
DE_229_P10_001	Drg No
Camland	Client
Parcel 10 PH4 RM Landscape	Project
Location Plan	Title
1:1500 @ A1	Scale

Scale 1:1500

0m 12 24 48

Define.

LEGEND

Reserved Matters Application Boundary

Proposed services; See engineers drawings for details and specifications.

Hard Landscape

TimberTech 'Legacy Collection Ashwood Composite Deck'; Colour Ashwood; or similar approved.

Concrete block paving to footpath; Colour silver grey; 200/400 x 200mm; such as Marshalls Lunar Textured Paving'; or similar approved.

Grasscrete used to facilitate infrequent vehicular maintenance access.

Footpath surface material; Breedon gravel 'Wayfarer' or similar approved product.

Street Furniture & Play Equipment

B1 — Steel and timber seat with back and arm rests; Landmark Mettro 105 Bench; 1.8m; FSC Approved Douglas Fir; Powder Coated Steel; Colour RAL 5010 Gentian Blue; or similar approved.

B2 — Steel and timber seat without back and arm rests; Landmark Mettro 105 Bench; 1.8m; FSC Approved Douglas Fir; Powder Coated Steel; Colour RAL 5010 Gentian Blue; or similar approved.

B3 — Steel and timber picnic bench; Landmark Mettro 106 Picnic Bench; 2.3m; Douglas Fir; Powder Coated Steel; Colour RAL 5010 Gentian Blue; or similar approved.

1.5m wide by variable length community use planter; Timber raised bed; Treated Softwood Sleepers; 2250x1500x125mm; or similar approved.

iP — Information Panel; Landmark 'Aberdeen Lecturn Sign'; 1.2m height x 1700x250x5mm overall; Powder Coated Steel; Colour RAL 5010 Gentian Blue; or similar approved.

CP — Cycle Stands; Landmark 'Sheffield Cycle Stand'; Galvanised steel; 900mm x 260mm' or similar approved.

LB — Litter Bin; Landmark 'Mettro 107 Litterbin'; Timber and stainless steel; 900mm high x 600mm wide; Colour RAL 5010 Gentian Blue; or similar approved.

RLB — Recycling Litter Bin; Landmark 'Mettro 107 Litterbin'; Timber and stainless steel; 900mm high x 600mm wide; Colour RAL 5010 Gentian Blue; or similar approved.

DB — Dog Waste Bin; Landmark 'Mettro 508 Dog Waste Bin'; Powder Coated Steel' Colour RAL 5010 Gentian Blue; 1.8m height; or similar approved.

Heavy duty pergola; Landmark Street Furniture; FSC approved hardwood; vertical wires on posts for plant guiding; 4650 mm (L) 3000(W) x 2210 (H); or similar approved.

EP — External electric pop up point

WS — Water supply (Brick enclosed)

BH — Invertebrate hotel; Landmark 'Stamford - Bee Post'; 100mm² x 2000mm/1000mm; or similar approved.

C1 — Timber compost bin. Garden Works Direct. FSC Treble Wooden Classic Style Compost Bin. Designed for use with the community planters. 2550mm (L) x 850mm (W); or similar approved.

IB — Low level Illuminated bollard; Landmark 'Eye Wired Illuminated Timber Bollard'; FSC certified Oak; 150x150x900mm; Surfaced fixed; or similar approved.

Bo — Bollard; Landmark 'Invia'; 150x150x1250mm root fixed; Colour natural wood; or similar approved.

Soft Landscape

Meadow Seed Mix
Planted with Flowering Lawn seeding mix such as John Chambers Heritage Flowering Lawn Mix or similar; planted at 4g/m²

Meadow Seed Mix to Grasscrete
Flowering Lawn seeding mix to grasscrete; such as Emorsgate EL1 or similar; planted at 4g/m²

Dry River
Recycled crushed chalk from the site to create a chalk substrate to be seeded with appropriate calcareous seeding mix such as 'Emorsgate EM6F Meadow Mixture for chalk and limestone soils'. Planting at 4gm² or similar approved product.

Grass matting safety surfacing to play area
Safety surfacing to play area planted with amenity wear tolerant grass mix such as Emorsgate EG22, safety mats in accordance with BSEN1177:2018 or similar approved product

Play Area Planting
Play Area planting to include shrub species planted in 3L pots using the following species: Lonicera nitida, Lavendula angustifolia, Stachys byzantia, Cornus kousa and Salix 'britensis'

Semi native groundcover mix
Groundcover 3-5L planted at 4per m2

- Hylotelephium x mottramianum 'Herbstfreude'
- Geranium 'Johnsons Blue'
- Geranium macrorrhizum
- Polygonum bistorta
- Stachys byzantia
- Vinca minor
- Lonicera ligustrina sp.
- Galium odoratum
- Achillea sp.
- Genista lydia
- Dryopteris affinis
- Alchemilla mollis

Specimen Shrubs (50/50 - 5L/10L Pots)

- Crataegus monogyna
- Corylus avellana
- Viburnum opulus
- Sambucus nigra
- Ribes sanguineum

Specimen Climbers

Species	Height	Root	Note
Lonicera periclymenum	0.3-0.4m	5L, Caned	-
Humulus lupulus 'Aureus'	1m	5L, Caned	On pergola
Wisteria floribunda 'Alba'	1m	10L, Caned	On pergola

Note: *Climbers outside of Community garden to be Lonicera periclymenum (Honeysuckle) that will naturalise in the hedgerows to add interest. Climbers attached to pergola using wires and vine eyes with climbers carefully removed from canes and attached using suitable ties.*

Specimen Tree Planting

Code	Species	Girth	Height	Root	Clear Stem
Quer	Quercus robur	16-18cm	4-4.5m	RB	-
GinK	Ginkgo biloba	14-16cm	4-4.5m	RB	-
AceC	Acer campestre	14-16cm	4-4.5m	RB	-
BetPe	Betula pendula	14-16cm	4-4.5m	RB	Multi-stem
PruA	Prunus avium	12-14cm	3.5-4m	RB	-
Carb	Carpinus betulus	12-14cm	3.5-4m	RB	-
SorA	Sorbus aucuparia	12-14cm	2.5-3m	RB	-
SalCi	Salix cinerea	12-14cm	2.5-3m	RB	-

Specimen Fruit Trees

Code	Species	Girth	Height	Root	Clear Stem
MalD	Malus domestica sp.	8-10cm	2m+	RB	-
PruD	Prunus domestica.	8-10cm	2m+	RB	-

Note: *Fruit trees to be selected from a variety of edible fruiting species to aid cross pollination. Local varieties are preferred if available.*

Formal Hedge

Species	Height	Root	Density
Ligustrum ovalifolium	100-125cm	Transplants	5 plants per linear metre
Cornus sanguineum	80-100cm	Transplants	3 plants per linear metre
Lonicera nitida	60cm	5L Container	3 plants per linear metre

Willow walk; timber stakes for whips

Play Equipment

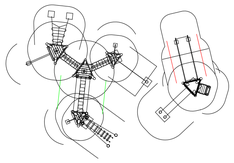
Mounds to Lawn

Natural Play Boulders; Locally Sourced Ragstone; 600-1000mm and max height 600mm; Smooth; Min. 400mm spacing

Wobbly Wild Boar

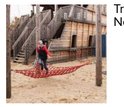
Triangular Platform Combination Equipment with rope bridges, slide, running boards, climbing net, etc.

Tic Tac Toe Board



Toddler's Platform Hut

Balance Blocks



Triangular Climbing Net

Table Tennis table

Rev	Description	Date
A	Drawing amended to reflect EDC/CSA comments	08.12.25

A	Rev
DE_229_P10_003	Drg No
Camland	Client
Parcel 10 PH4 RM Landscape	Project
Neighbourhood Green Landscape	Title
1:200 @ A1	Scale

SCALE 1:200
0m 2 5 10

Ashmere

LANDSCAPE DESIGN STATEMENT FOR PARCEL 10 NEIGHBOURHOOD GREEN
WHITECLIFFE, EBBSFLEET

DECEMBER 2025 – REV A

REV A – Updated to reflect EDC comments – 05.12.25

EBBSFLEET GARDEN CITY

WHITECLIFFE

©
DEFINE

camland
developments ltd

CONTENTS

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INTRODUCTION

This Landscape Design Statement has been prepared on behalf of Eastern Quarry Ltd, who are developing the Whitecliffe site. It is submitted as a part of a reserved matters planning submission for the Neighbourhood Green in Parcel 10 and the South Western Boundary to the Site.

This statement should be read in conjunction with the detailed application plans for the these landscape areas.

- DE_229_ASHSWNG_RM_001-General Arrangement Plan
- DE_229_ASHSWNG_RM_002-Detailed Landscape Plan 01
- DE_229_ASHSWNG_RM_003-Detailed Landscape Plan 02
- DE_229_ASHSWNG_RM_004-Detailed Landscape Plan 03
- DE_229_ASHSWNG_RM_010-Site Location Plan
- DE_229_ASHSWNG-RM_011 Landscape Sections

These drawings are to be read in conjunction with BPTW's adjoining submission for the adjacent area of housing. Both designs have been coordinated together in a way that will provide a comprehensive neighbourhood with well thought out connections focusing on views and the surrounding landscape.

Context

This Landscape Design Statement provides an explanation of the design rationale that has been incorporated into the proposals along with images of the details of planting, hardscape, and street furniture.

Location Plan

LANDSCAPE DESIGN STATEMENT

ASHMERE AMP&DC

Design Vision

To set the scene, the Design Code requires the south western Neighbourhood Green to be "located close to the landscape buffer on the edge of the site as well as the southern lake".

The proximity to these spaces offers an opportunity to create a park with a naturalistic and undulating character, with dips and mounds that provide a range of ecological diversity.

The Western Boundary will contain swathes of native planting to provide the necessary requirements for site wide ecology, structure and wildlife (as identified in the BAP). It will also provide leisure routes, and form connections to the wider pedestrian and cycle network.

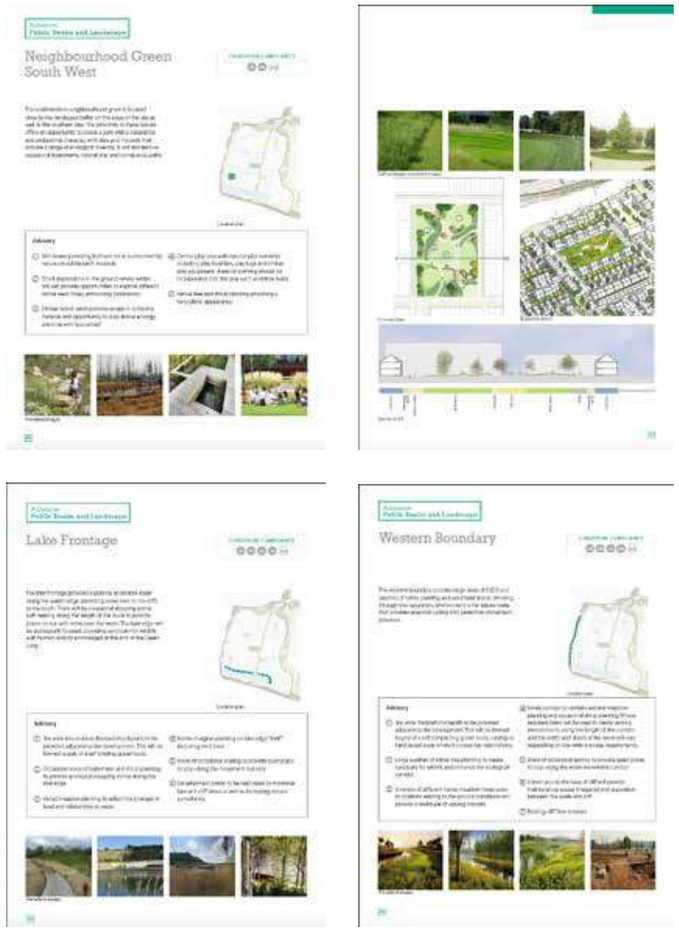
The principles set out in the DC can be summarised as follows:

Neighbourhood Green

- Mini Lawns surrounded by earth mounds;
- Small depressions in the ground providing opportunities to provide different seed mixes;
- Timber board walks provide opportunity to step over ecology;
- Central LEAP play area with natural play elements and willow walks;
- Use of native planting provides a naturalistic appearance.
- Key Visual Links [to the wider landscape];
- Community Social Space for "pop up events";
- Landscape art intervention relating to quarry heritage.

Western Boundary

- Outdoor Gym Equipment (See public Engagement feedback below) 3m wide leisure route (self binding gravel);
- Key Visual Link termination
- Groups of native planting to create wildlife stepping stones;
- Wildflower meadow responding to changes of level;
- Use of native marginal planting;
- Occasional areas of seating to provide place to rest and enjoy the space.



Pages from Ashmere Design Code

PUBLIC ENGAGEMENT

Public Engagement Event Summary Report

On the 9th July 2025 EDC hosted a public engagement event on the Western Edge of Ashmere in the existing parkland beside the cliffs. EDC kindly circulated their 'Event Summary Report' which contains some very useful feedback from local residents. Residents were asked what kind of activities they would like to see and this is how they responded:

Highest scoring play facilities Number of votes

Monkey bars & balancing beams	18	Equal gender split
Area for ball games	18	Equal gender split
Basket swings/ large group swings	17	Majority votes from girls
Sheltered areas	16	An opportunity for shade, picnic, seating
Skating facilities	16	Equal gender split
Climbing frame	16	Equal gender split
Table Tennis	15	Received highest votes from adults

Other play facilities which were suggested and proved popular amongst children and adults included zip lines, trampolining, adventure trails, a place for board games (e.g. floor noughts and crosses) and play equipment for toddlers.

More general suggestions for facilities which they hoped to see introduced within the neighbourhood green and other future parks in Ashmere included more benches, more biodiversity, picnic tables, more bins including dog bins, drinking fountains and better lighting specifically along the western edge.

What residents wanted to see:

- Requests for high quality playgrounds from both adults and children to include formal play equipment including slides and swings, which Ashmere doesn't currently include. This was preferred over boulders and climbing objects.
- There was also a request for a play area for toddlers and young children, suggestions mentioned include adventure trails, play on the way and informal climbing.
- An area to support ball games with some informal kick-about area, an area with a goal post was welcome.
- Scooting, biking and skating for children must be allowed in the park. Many children that attended the engagement even arrived on bicycles and expressed keen interest on having play which supported that.
- Space to sit in the shade and in the sun as well, particularly important in the winter,
- as well as seating spaces to face each other. We were engaging on one of the hottest days of the year, and there was no shade in the western edge, which was highlighted by residents as a key issue.
- Opportunities for play for older children and adults included table tennis and a place for board games.

What residents didn't want:

- The existing outdoor gym equipment is infrequently used by existing residents and there was little desire for additional equipment.
- There was mention of reducing the size of the pumping station.

Design Changes

In Summary there are several key actions as a result of this engagement and also some worthy observations from the design team.

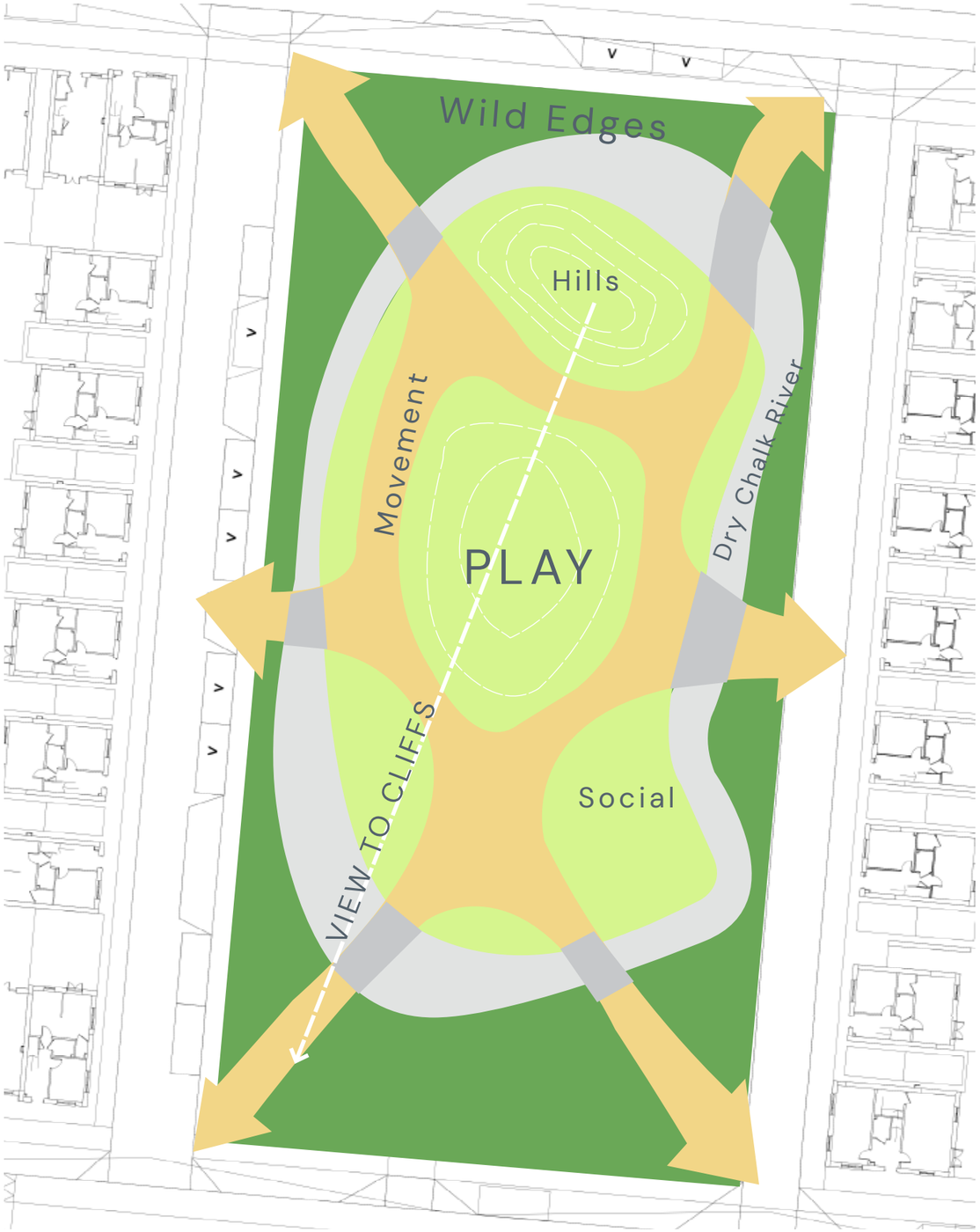
Given Ashmere currently has little of the open space built that is planned for the future the residents are currently under provided for so it is no surprise that they would welcome more open space, more formal play, kickabout space etc. The only space they have at the moment is characterised by a few boulders and some gym equipment. Much of their wish list will be provided in the form of the upcoming neighbourhood greens (both this one and the approved Neighbourhood Green in Phase 02 which are due for completion in 2026). In addition to this, residents will have access via Fastrack in September 2025 to Alkerden and Ashmere, and over the coming years the Major Urban Park (that is due to start construction in 2026). The MUP will contain Skate facilities, kickabout spaces, more play and areas for riding bikes.

Notwithstanding all this, the request to have fewer gym areas is noted and this is contrary to principles set out in the AMP&DC. Therefore we propose to :

- Remove the proposed gym equipment from the upcoming planning submission and create a picnic area instead. As an initial suggestion, we propose to use the construction budget to get a table tennis table in the Neighbourhood Park and a Cradle Swing beside the cliffs instead.
- The design of the play area will take on board the public desire to include Monkey Bars and a balancing beam.

NEIGHBOURHOOD GREEN DESIGN

CONCEPT



Concept

The park has been design to be informal and take on a naturalistic character to reflect the surrounding landscape in this area. Chalk will be used as an accent in the park, which will enhance the sense of place, a park that sits within a former quarry.

The following principles will be applied to the design;

Play

Central Play Area with a wildlife theme, focusing on bugs and flowers. Providing a range of play experiences from imaginative play through to a larger climbing frame for older children to hang out on.

Movement

Footpaths and spaces are connecting to each corner of the Neighbourhood Green and also at mid points along the length. This will ensure that the park forms a key node in the wider movement around the site and helps people to orientate themselves in their surroundings.

Dry River

A curvaceous and winding loop that will create a natural border around the park's edges and reflect the site's chalk geology, in response to the Site requirement for a landscape art intervention. Made from site won crushed chalk this dry river will create an interesting focus that creates additional habitat and options for games and natural play.

Community Garden

A small social space will be provided with opportunities for local residents to plant their own part of the park, a water point an electrical supply along with notice board seating and a pergola.

Hills

Small grass hills are created in the landscape to provide an interesting form, improve views to the south and provide opportunities for play and relaxing.

Wild Edges

The edges to the park will create a naturalistic frame where native planting will be used to enhance biodiversity and create structure.

View to Cliffs

Views of the cliffs over the roof tops are possible from the park and these will be framed by leaving a corridor through the tree planting.

DESIGN

Legend

① Central Play Area with a wildlife theme, focusing on insects and flowers. Providing a range of play experiences from imaginative play through to a larger climbing frame for older children to hang out on, framed by semi ornamental planting mix

② Elements of natural play incorporated into the park. Consisting of play boulders and willow tunnels.

③ Earth modelling to create small grass hills

④ Community Social space with benches, pergola, community planters and table tennis table. Serviced with lockable water connection and electrical supply pillar box

⑤ Dry Chalk River. Crushed chalk weaving through the park adds interest, opportunities for informal play and habitat

⑥ Timber boardwalk material aligned with dry river creates interesting threshold detail.

⑦ Footpath connections aligned on key movement routes and defining spaces within the park

⑧ Naturalistic planting around edges to the park using predominantly wildflower seed with shrub and perennial planting.

⑨ Formal hedge defines the park edge and provides separation between the car parking and the space

⑩ Information panels explaining botanical features such as chalk soil planting and wildflower edges

⑪ Pumping station and associated vehicular access. Softened with planting, grasscrete parking and tree planting to help it assimilate into the landscape.

SCALE 1:500

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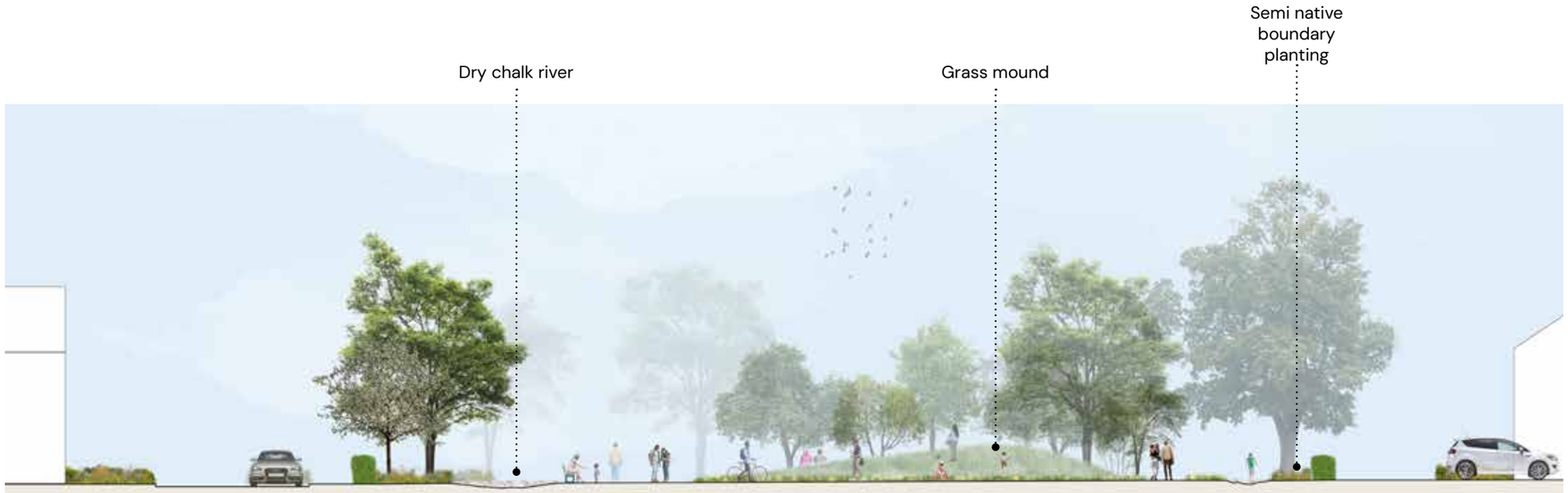
N

SECTIONS

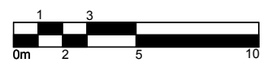


A-AA

B-BB

Section Location Plan (Not to Scale)

SCALE 1:250



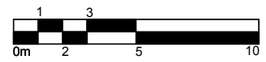
C-CC

Amenity lawn

Community garden

Section Location Plan (Not to Scale)

SCALE 1:250



COMMUNITY GARDEN

COMMUNITY GARDEN

Community Garden

The Community Garden will be managed by locals so that they take an ownership of this part of the park. The design creates a hedge boundary that subtly creates the message that this part of the park has a different use, a more enclosed and human scale where people can meet and socialise.

This area will promote sustainable living, provide educational opportunities and encourage environmental stewardship for residents of Ashmere.

Legend

① Raised timber planters provide areas to customise planting and are helpful to those who may be in wheelchairs or less mobile.

② Standard planting beds can be customised within the space akin to a standard garden flower bed.

③ Pergola provides shelter and shade and a place to meet

④ Formal clipped hedge creates enclosure and human scale to make it more inviting to sit within a larger space

⑤ Lockable water point so that the community can water their plants (and this can also be used by the site wide maintenance team)

⑥ Electrical supply in pillar box (Can be accessed by Community volunteers and maintenance team)

⑦ Compost area

⑧ Notice Board (on garden entrance)

⑨ Picnic Bench

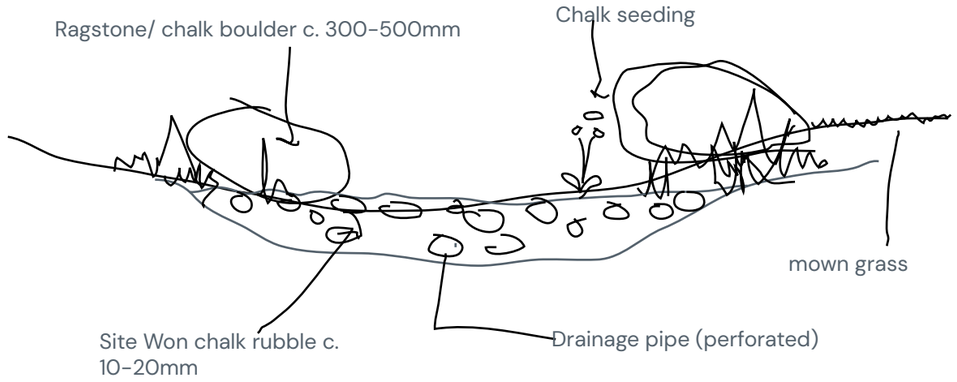
⑩ Two bug hotels set within planting bed

DRY RIVER

The Area Master Plan locates a “Landscape Intervention relating to Quarry Heritage” in this Neighbourhood Green. The Dry River is this intervention, and more. It is a design response that does several things:

- It provides a link to the past, to the chalk quarrying and the site’s interesting geology. A connection to the ever present cliffs that loom above the surrounding roof tops.
- It acts as a flowing frame between the Natural Edges of the park and the more active, recreational parts of the park. In doing so, it provides an interesting habitat for sparse native plants that will tolerate dry chalk conditions. Such as Yarrow, Field Scabious and Rest Harrow. The type of plants we found when we first arrived in the site, living on piles of chalk waste. These will be seeded in the gaps, some taking root when the right conditions align.
- It will also act as something fun. A trail for the adventurous. A connection to the past and an interesting change from the normal.
- The Dry River will contain a number of boulders (either chalk or imported Ragstone from a nearby quarry. Undulations will happen that allow the space to take on rainwater and drain into the wider network, effectively turning the whole thing into a rain garden/ SUDS feature.
- To the side, an interpretation panel will explain these things. Educating the community in the site and inviting them to look for emerging species or just to connect them to the history of the place they live.

DRY RIVER SCRAPBOOK



PUMPING STATION

Pumping Station

The pumping station forms part of the site wide strategic drainage strategy and is needed to limit the depth of sewers that would otherwise be necessary to drain the properties served by gravity drainage. Construction (Design and Management) regulations require designers to consider the safety of construction and maintenance personnel during the life of the project while designing the scheme. Excessively deep sewers should therefore be avoided. If the pumping station were not provided, it would require sewers in excess of 7m depth. Locating the pumping station within the Neighbourhood Green enables a 15m cordon sanitaire to be provided to any adjacent habitable properties, while remaining accessible for maintenance purposes.

Infrequent maintenance access will be possible from the south of the pumping station and will be facilitated with a grasscrete type material that will allow wildflowers and grass to grow through.

Modern pump stations are designed to be both quiet and odour-free during normal operation, with pumps housed in soundproofed structures and sophisticated odour control systems in place to contain smells from wastewater.

Legend

① Clipped hedge around the enclosure

② Planting used to create biodiversity benefits and help the pumping station assimilate into the landscape

③ Grasscrete used for vehicular maintenance access

④ Underground storage tank

⑤ Inspection chambers (flush with landscape)

D-DD

SCALE 1:250

1 3
0m 2 5 10

PLANTING STRATEGY

Planting Strategy

A variety of species has been selected to ensure a resilient palette in terms of biosecurity, ecological diversity and drought. Larger species will provide structure, creating opportunities for shade and shelter for birds.

Tree planting in the park will consist of native UK species that help harmonise with the parks naturalistic character and proximity to the edges of the site.

The Wild Edge is a low level mix of semi native planting that runs around the park edges, away from footfall and therefore able to form a soft backdrop to the park, with the hedge planting behind.

The amenity grass areas will contain a number of UK native flowering species that help to keep the lawn protected during drought, and also add interest in late spring with a carpet of daisies.

The play area planting is designed to be robust but also provide sensory experiences for people. This will be located in small pockets that help add structure where needed.

A key feature of the landscape is the dry chalk river, which will be seeded with chalk loving windflowers from the UK. Wild seeds like this can be sown directly onto the chalk and where the conditions are right they will germinate. This is to simulate the conditions of the site that had piles of chalk debris after the quarrying had finished, areas of open mosaic habitat that happened as a result of natural regeneration.

Wild Edge: Semi-Native Ground Cover Planting

Dry Chalk Riverbed

Flowering Lawn Mix

Play Area Planting

PLANTING PALETTE

Specimen Tree Planting

A selection of Native specimen swill be used in the park to enhance biodiversity and provide structure. Where space allows in the middle of the park, an Oak tree or two might be planted, where as the edges will contain medium sized trees such as the Maple and Birch.

Field Maple- Acer campestre

English Oak -Quercus robur

Silver Birch - Betula pendula

Hornbeam - Carpinus betulas

Grey Willow -Salix cinerea

Wild Cherry -Prunus avium

Rowan -Sorbus aucuparia

Fruit Tree Planting

A series of small fruiting trees will be planted around the park to provide additional seasonal interest and allow people the opportunity to pick fruits. Where apple are used, a range of cultivars will be specified to allow for cross pollination (and if possible, from local Kentish nurseries)

Common Plum -Prunus domestica

Apple -Malus domestica sp

Wild Edge Planting

This planting mix will provide the planting structure to the edge of the park. A selection of species have been used that include some UK natives alongside more ornamental species . The range of species have been chosen to provide seasonal interest, structure all year round and also a range of flowers that are attractive to bees and other insects.

Groundcover

Hylotelephium × mottramianum ‘Herbstfreude’

Geranium x Johnsons Blue’

Geranium macrorrhizum

Polygonum bistorta

Stachys byzantina

Hebe albicans

Achillea sp

Genista lydia

Dryopteris affinis

Alchemilla mollis

Specimen Shrubs

Common Hawthorn
Crateagus monogyna

Common Hazel
Corylus avellana

Guelder Rose
Viburnum opulus

Elderberry
Sambucus nigra

Flowering Currant
Ribes sanguineum

Climbers

Climbers will provide additional structure, shade and habitat across the neighbourhood green.

Wisteria and Hops will grow over the pergola in the community garden, providing shade to the seating area below.

Honeysuckle will naturalise amongst the hedgerow, providing important dormouse habitat and seasonal interest.

Specimen Climbers

Common Honeysuckle
Lonicera periclymenum

Golden Hop
Humulus lupulus ‘Aureus’

White Wisteria
Wisteria floribunda ‘Alba’

Play Area Planting

This planting mix will provide non toxic, robust structure to the play areas edges while providing interesting sensory experiences and opportunities for wildlife.

Groundcover

Lavendula angustifolia

Lonicera nitida

Stachys byzantina

Cornus Kousa ‘Blue Shadow’

Salix alba var. vitellina ‘Britzensis’

Dry River Seeding Mix

Sowing EM6 directly onto exposed chalk or limestone can produce interesting results; establishment will be slower than on well developed soils, but less management will be needed.

For further details refer to Emorsgate mix EM6F (Flower component)

Cowslip - Primula veris

Knapweed - Centaurea nigra

Yarrow - Achillea millefolium

Yellow Rattle - Rhinanthus minor

Salad Burnet - Sanguisorba minor

Hedging

The park will contain 2 hedge types. Privet (maintained at 1.2m high) will be used around the parks perimeter, providing an all year round screen to the parked cars around the park and providing a sense of enclosure within the park. Cornus sanguinea will be used as hedging around the community garden, providing seasonal interest and opportunities for colourful stems in the winter.

Dogwood- Cornus sanguinea

Privet -Ligustrum ovalifolium

Flowering lawn

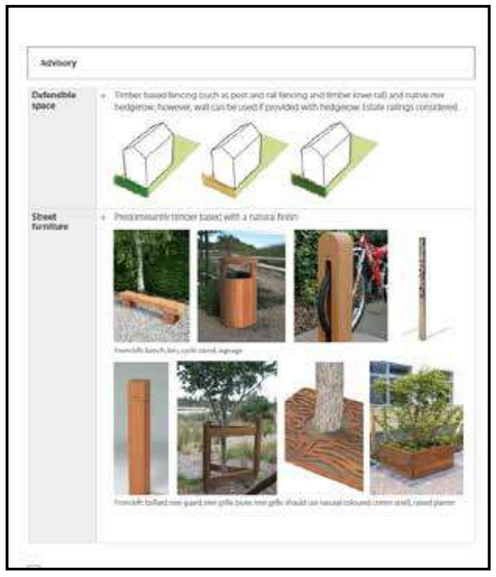
Lawn

Amenity lawn areas will be made up of a flowering lawn mix to enhance the overall biodiversity of the neighbourhood green. Flowering lawn mix to include grass, daisy, clover and buttercups, such as John Chambers Heritage Flowering Lawn Mix.

HARD LANDSCAPE PALETTE

The Parkland sits within the 'Farmland Heritage' Character Area and as such requires the following materials in order to comply with the AMP;

- Predominantly timber site furniture
- Mid or Silver grey block paving with white highlights



Hard materials in the Neighbourhood Green

Material: Composite wood effect decking to threshold detail in Neighbourhood Green, such as TimberTech 'Legacy Collection Ashwood composite deck'

Colour: Ashwood

Material: Block paving to footpaths, such as Marshalls 'Lunar Block Paving'

Finish: Textured Size: 400/200 x 200mm

Colour: Silver grey

Item: Bench such as Landmark 'Mettro 105 - Straight Bench', supplied with armrest and back support. Powder coated steel, FSC approved

Size: 1.8m long Color: RAL 5010 Gentian Blue

Item: Picnic Bench such as Landmark 'Mettro 106 - Picnic Bench'

Detail: Powder coated steel, FSC approved timber

Size: 2.3m long Color: RAL 5010 Gentian Blue

Item: Bespoke community planter

Detail: FSC approved treated softwood sleepers

Size: Various

Item: Pergola in community garden, such as Landmark Timber Pergola

Detail: FSC approved timber

Size: Various

Item: Invertebrate hotel such as Landmark 'Stamford - Bee Post'

Detail: FSC approved timber

Size: 100mm^2 x 1000/2000mm

Item: Dog Waste Bin such as Landmark 'Mettro 508 - Dog Waste Bin'

Detail: Powder coated steel, FSC approved timber

Size: 1.8m long Color: RAL 5010 Gentian Blue

Item: Litter Bin such as Landmark 'Mettro 107 Litterbin'

Detail: Timber and stainless steel

Size: 900mm high x 600mm

Colour: RAL 5010 Gentian Blue

Item: Cycle Stand, such as Landmark 'Sheffield Cycle Stand' Galvanised steel

Size: 900mm high x 260mm

Item: Timber Bollard such as Landmark 'Eye Wired Illuminated Timber Bollard' FSC Certified Oak, with integrated light fitting, 4 way weathered top

Size: H900mm, W150mm, D150mm

Colour: Natural

Item: Bollard such as Landmark 'Invia'

Colour: Natural Wood

Item: Information Panel, such as Landmark 'Aberdeen Lecturn Sign'

Size: 1700x250x5mm, 1.2m height

Colour: Natural Wood

Note: *All products are subject to costs and will be similar or approved*

WESTERN BOUNDARY DESIGN

DESIGN

① 3m wide leisure route in golden self binding gravel

② Timber jetty protruding into the swale edge to provide enhanced views over the natural landscape.

③ Footpath connections tying into adjacent development.

④ A variety of UK Native shrubs and tree species planted within the swale. Where possible, some trees will be translocated from chalk spine area on Site by the Site's ecologist.

⑤ Native hedge planting running alongside swale to provide important habitat for wildlife.

⑥ A range of native seed mixes planted along edge to create marginal habitat

⑦ Post and wire fence restricting access into the swale.

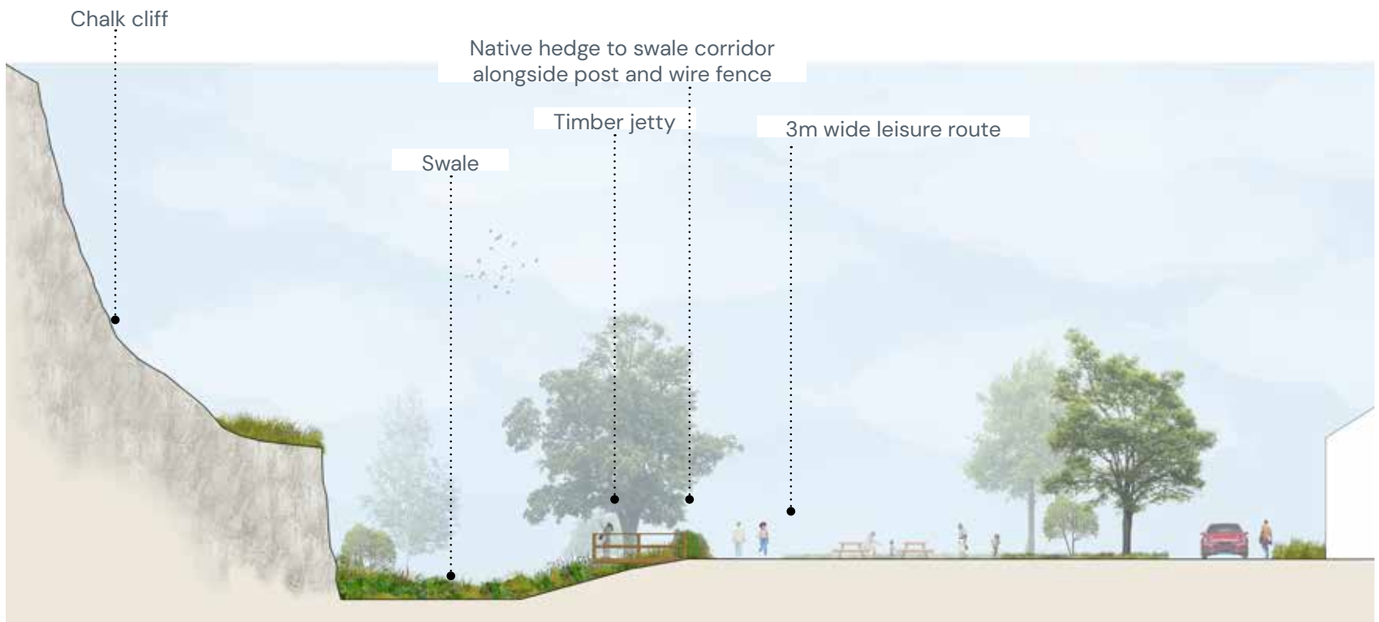
⑧ Plaza area connecting to Fastrack reflective of the opposite side to the road.

Ashmere South Western Boundary

This landscape will be a continuation of the North Western Boundary that has been constructed and already in use.

However, following the public consultation held by EDC (as summarised earlier in this document) the gym equipment that was previously prescribed for this area will be replaced by a Picnic Area. With a table tennis table being added into the Neighbourhood Green.

1. 3m wide leisure route in golden self binding gravel
2. Timber jetty protruding into the swale edge to provide enhanced views over the natural landscape.
3. Footpath connections tying into adjacent development.
4. A variety of UK Native shrubs and tree species planted within the swale.
5. Native hedge planting running alongside swale to provide important habitat for wildlife.
6. A range of native seed mixes planted along edge to create marginal habitat
7. Post and wire fence restricting access into the swale.
8. Picnic Area and LAP



E-EE

SCALE 1:300
1 3
0m 2 5 10

PLANTING PALETTE

Specimen Tree Planting

A selection of native specimen trees and shrubs will be used in the landscape to enhance biodiversity and provide structure.

Overall, the landscape will provide substantial native trees that will grow to create an important wildlife corridor in the site.

Note: Suitable trees/shrubs removed from elsewhere on Site to be translocated to the south west buffer and replanted under supervision from the Site ecologist.

Native Trees

Field Maple- Acer campestre

English Oak -Quercus robur

Silver Birch - Betula pendula

Hornbeam - Carpinus betulas

Grey Willow -Salix cinerea

Wild Cherry -Prunus avium

Rowan -Sorbus aucuparia

European Aspen- Populus tremula

White willow -Salix alba

Grey Willow- Salix cinerea

Downy Birch -Betula pubescens

Wild Service Tree - Sorbus torminalis

Specimen Shrubs

Common Hawthorn
Crateagus monogyna

Common Hazel
Corylus avellana

Guelder Rose
Viburnum opulus

Elderberry
Sambucus nigra

Flowering Currant
Ribes sanguineum

Seeding Mixes

A selection of native seed mixes will be sown through the green corridor that relate to the likely ground conditions. These will include the flowering lawn mix in recreational areas (minimal), a general mix for most locations and then marginal and wetland seeding for the edges and lower parts of the basins.

This will create a rich tapestry of intertwining native meadow and wildflower species across the site.

Flowering lawn mix to include grass, daisy, clover and buttercups; such as John Chambers Heritage Flowering Lawn Mix.

Wildflower seed mixture; such as Emorsgate EM6.

Wetland grass area (to swales); such as Emorsgate EM8.

Wildflower seed mixture, suitable for sowing at the wet margins of streams and ditches; such as Emorsgate EP1.

Hedging

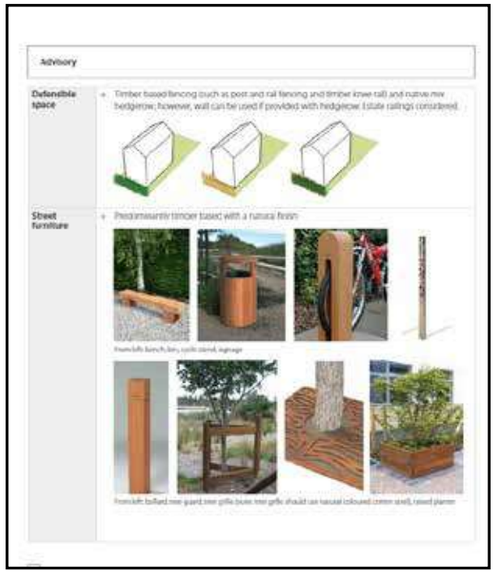
Hedging along the corridor will consist of a mix of native hedge species. This will predominantly be made up from Hawthorn with other species interspersed to create diversity.

Native hedgerow

Acer campastre, Alnus glutinosa, Corylus avellana, Crataegus monogyna, Ilex aquifolium, Malus sylvestris, Viburnum lantana, Prunus domestica, Prunus cerasifera, Prunus spinosa

HARD LANDSCAPE PALETTE

The hard materials palette around the periphery of the Site will use a corten colour to reflect the site's industrial history, as per the Ashmere Design Code.



Material: Composite wood effect decking to threshold detail in Neighbourhood Green, such as TimberTech 'Legacy Collection Ashwood composite deck'

Colour: Ashwood

Material: Breedon Gravel to footpaths

Finish: Textured

Colour: Golden Amber

Bailey Street Scene Greengate Seat

Details: Supplied with armrest and back support, Corten steel finish frame, FSC approved hardwood

Size: 1.8m long

Bailey Street Scene Holgate Bench

Details: Corten steel, FSC approved hardwood,

Size: 1.8m long

Bailey Street Scene Greengate Picnic Set

Details: Corten steel, FSC approved hardwood,
Size: 1.8m long

Material: Block Paving such as Marshalls 'Modal X Textured Paving'

Colour: Light Granite & Mid-Grey Granite

Size: 300x200mm

Material: Granite striations in South Western Boundary Plaza

Colour: Silver grey

Size: 100x100mm Laid in grid with 5 rows

Item: Dog Waste Bin such as Landmark 'Mettro 508 - Dog Waste Bin'

Detail: Powder coated steel

Size: 1.8m long

Bailey Street Scene Ascot Litter Bin

Details: Powder coated with laser cut lettering; Text to say 'General Waste' & 'Mixed Recycling'

Colour: Corten colour finish

Size: 1100mm high; 110L capacity

Item: Timber Bollard such as Landmark 'Eye Wired Illuminated Timber Bollard'

Detail: FSC Certified Oak, with integrated light fitting, 4 way weathered top

Size: H900mm, W150mm, D150mm Colour: Natural

Bailey Street Scene Piramidal Bollard

Detail: Corten steel finish

Size: H900mm, W100mm

Note: *All products are subject to costs and will be similar or approved*

LIGHTING STRATEGY

Illustrative Plan

Lighting within the South Western Boundary and Neighbourhood Green provides security and safety for pedestrians whilst leaving certain areas unlit due to ecological sensitivities. It is anticipated that this concept will be developed in further detail via condition by a lighting specialist but sets out the key concepts and hierarchy at this stage.

Further to this, key movement routes throughout the park will also be lit for those recreating within or passing through the park at night.

LEGEND

- Lighting Mast
- Illuminated bollard

ECOLOGICAL STATEMENT

Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet
DA10 1EE

17th September 2025 Our Ref: RT-MME-121456-2025-03

Ashmere Neighbourhood Green – Ecological Compliance Statement

Introduction
In August 2025 Middlemarch Environmental were commissioned to produce an Ecological Compliance Statement for the Ashmere Neighbourhood Green Reserved Matters Planning Application.

An initial Ecological Walkover of the site was undertaken by Jacob Kench, Principal Ecological Consultant and Arthur Jones Ecological Consultant on 5th April 2025 as part of the Ashmere Parcel 10 RMA, which runs through the middle of the two Ashmere Neighbourhood Green parcels. An updated Ecological Walkover was conducted by Ben Huxley on 2nd September 2025.

The site is split in two distinct areas. The eastern informal green zone which sits in the middle of Ashmere Parcel 10 developed space, hereafter referred to as the Neighbourhood Green, and the western natural area which will become parcel 24 under the Mini Biodiversity Action Plan document system, hereafter referred to as Parcel 24.

The following documents are the most recent to have been provided to Middlemarch. Comments have been made on these plans which we understand will contribute towards final plans for submission.

Document Name / Drawing Number	Author
Location Plan / DE_229_P10_001	Define
General Arrangement / DE_229_P10_002	Define
Landscape Design Statement For Parcel 10 Neighbourhood Green Whitecliffe, Ebbsfleet	Define
Parcel 10 PH4 RM Landscape / DE_229_P10_004	Define
Neighbourhood Green Landscape / DE_229_P10_003	Define

Table 1: Documentation Provided by Client

Current Site Condition Previous Mitigation
The site was previously made up of quarrying spoil heaps which had been left undisturbed from approximately 2010 until clearance and reprofiling work began in 2017. Middlemarch conducted site walkover surveys prior to groundworks starting and vegetation being cleared. Mitigation was conducted for nesting birds, herpetofauna and badgers *Meles meles*.

Clearance works were completed in 2020 but ongoing land forming and reprofiling of the site continued until 2022.

Habitats – Neighbourhood Green
The Neighbourhood Green area had previously been cleared and levelled as part of the handover for Ashmere Parcel 10. At the time of both the initial and updated walkover this section was entirely covered by bare ground. It appeared some seeding had taken place as part of dust suppression works but shoots of the planting were only just breaching the surface.

Habitats – Parcel 24
To the south of the parcel a large had been cleared and levelled as part of the completed groundworks and remained as bare ground. To the western boundary of the parcel the levels rose towards the bottom of the cliff face where an area of scrub dominated by butterfly bush *buddleia* with some bramble *Rubus fruticosus* ran north gradually narrowing. Small scattered patched of scrub were present along the cliff edge pushing further north through the parcel where areas of ephemeral/ short perennial vegetation began to dominate the parcel. Species including birdsfoot trefoil *Lotus corniculatus,* rough hawksbit *Leontodon hispidus,* bristly oxtounge *Helminthotheca echioides,*

Middlemarch Environmental Ltd. Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
Email: jacob.kench@middlemarch-environmental.com Tel: 01676 525880

Black mustard *Brassica nigra,* teasel *Dipsacus* and mugwort *Artemisia vulgaris* were dominant, with scrub species such as buddleia and bramble beginning to colonise. A ditch had recently been dug running from a small headwall just beyond the northern boundary of the site south into the site to help hold water running off of developed land to the north. This was holding water at the time of the survey but no aquatic vegetation had established.

Species
During the early summer survey, a number of birds displaying nesting behaviour were noted within the scrub on the western boundary. These included Blackbird *Turdus merula,* Dunnock *Prunella modularis* and wren *Troglodytes troglodytes*. No nesting behaviour was noted in the September survey. A full nesting bird survey was not undertaken as the vegetation was not imminently being removed.

Fox *Vulpes vulpes* signs including footprints and droppings were noted on site although there was no den on site.

Key Species Considerations
Birds – The ephemeral/ short perennial vegetation on site provides suitable nesting conditions for skylark. It should therefore be cleared outside of nesting bird season. The scrub on site was providing suitable nesting habitat for a range of common species. A full check of vegetation on September the 2nd found no birds to be using the vegetation for nesting.

Any clearance should be undertaken outside of nesting bird season. Where this is not possible a nesting bird survey should be conducted by a suitably qualified ecologist prior to works commencing.

Dormice – Although the site boundary only included a small area of scrub offering poor species diversity, the scrub was deemed to offer suboptimal dormouse habitat and it was noted that the clearance was in close proximity to dormouse records on site, therefore dormouse tubes were installed along the scrub line in April 2025 to establish if the area could be cleared under a Precautionary Working Method Statement for dormice or whether a licence amendment to Natural England Licence 2017-31542-EPS-MIT-5 would be required.

Herpetofauna - Due to the sites isolated position and recent clearance it was considered unlikely the site would have been colonised by herpetofauna. Although vegetation clearance should be conducted under an ecological watching brief to ensure any herpetofauna on site can be moved to retained habitat.

Mammals – Field vole *Microtus agrestis* may have colonised the vegetated areas of the site as they were found on the neighbouring land parcel. Vegetation should therefore be cleared towards retained vegetation to encourage any individuals which may have moved into the site into retained habitat.

If a fox den is discovered in the vegetation works should stop and a suitably qualified ecologist contacted to establish next steps.

Design Principals
The latest and most comprehensive site wide Biodiversity Action Plan Document *Eastern Quarry Landscape and Ecological Management Plan RT-MME-121456-300 Rev A1* provides an outline for the strategy for the creation, enhancement and management for the whole site in order to benefit biodiversity. This Landscape and Ecological Management Plan focuses on a series of management plans for key habitats and areas. The Neighbourhood Green within this application does not fall within these management plans and is therefore covered by the general site wide recommendations listed below, but Parcel 24 does fall within this list and a Mini Biodiversity Action Plan for the area will now be written under report number RT-MME-121456-324. This will specify habitat and species requirements for the area to benefit biodiversity.

The following text has been taken from the Landscape and Ecological Management Plan and is relevant to the Neighbourhood Green section of this application.

Landscaping will play an integral role in the urban renaissance, in infrastructure, the public realm, regeneration initiatives, and development generally. Landscaping will promote biodiversity, with access throughout to high quality habitat creation.

Generic Planting Guidance
Native species chosen should reflect the project purpose, the physical conditions of the site, its biodiversity and landscape context.

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Email: jacob.kench@middlemarch-environmental.com Tel: 01676 525880

ECOLOGICAL STATEMENT

Informal Areas (Green Zones)
• 50% native tree & shrub stock
• 50 % non-native stock to be used as landscape features and visual focal points etc. but must be at least half of this must be wildlife friendly
• A minimum of 50% of the grass seeding is to comprise an appropriate wildflower/grass mix.

Species Enhancement Measures
A single species measure from the same report is also appropriate for this The Neighbourhood Green parcel;

- *Invertebrates – Super Invertebrate "Hotels" to be located in and around amenity and educational areas.*

Following review of the LEMP Middlemarch have consulted with Define on key ecological design principles for the Ashmere Neighbourhood Green. Below is a list of key principles that have been raised and changes made;

- **Native Woodland and Hedgerow –** Wherever possible there should be at attempt to increase native woodland cover on site. Through the clearance and development stage of the Eastern Quarry development there has been a loss of woodland on site leading to fragmentation of habitats. The semi-mature successional woodland which developed after quarrying works ceased has helped to support numerous protected species including dormice. To allow a healthy population of dormice to continue to exist on site it is important woodland habitat is created and existing habitat on site is linked. Parcel 24 forms a section in the key north – south link on site and therefore a perfect opportunity to link the northern and southern areas of habitat on site through a continuous vegetated belt of woodland and hedgerows. As well as the hedgerow already running through the site a request for further planting along the western boundary has been made.
- **Species Enhancement Measures –** As per the LEMP document species enhancement measures should be included in landscaping where appropriate. A super invertebrate hotel should therefore be added to the community garden as an educational area enhancement.

Conclusion
The following recommendations have been made:

- **Birds -** If vegetation clearance is conducted during nesting bird season (March-August inclusive) then a nesting bid check should be completed by a suitably qualified ecologist immediately prior to works starting.

- **Dormice –** Dormouse monitoring should continue on a monthly basis to establish if dormice are using the scrub on site. If dormice are found to be present a licence amendment to site wide licence, 2017-31542-EPS-MIT-5 will be required. If no dormice are found works can be undertaken under a Precautionary Working Method Statement.

- **Herpetofauna and other Mammals –** Clearance of remaining vegetation should be conducted under an ecological watching brief to ensure protection of any remaining small mammals or herpetofauna on site.

- **Landscape design -** All landscaping and species enhancement measures taken from the LEMP and listed above should be followed.

I trust that this report meets your requirement, however if you have any further queries, please do not hesitate to contact me.

Yours sincerely,
For and On Behalf of Middlemarch Environmental Ltd.

Jacob Kench
Principal Ecological Consultant

Checked and Approved By

Paul Roebuck MSc MCIEEM
Regional Manager: South

Middlemarch Environmental Ltd. Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
Email: jacob.kench@middlemarch-environmental.com Tel: 01676 525880

Eastern Quarry
Phase 1 Habitat Map - Ashmere Neighbourhood Green

Camland

C121456-2025-03-01	00
1:2,500	September 2025
JK	RP

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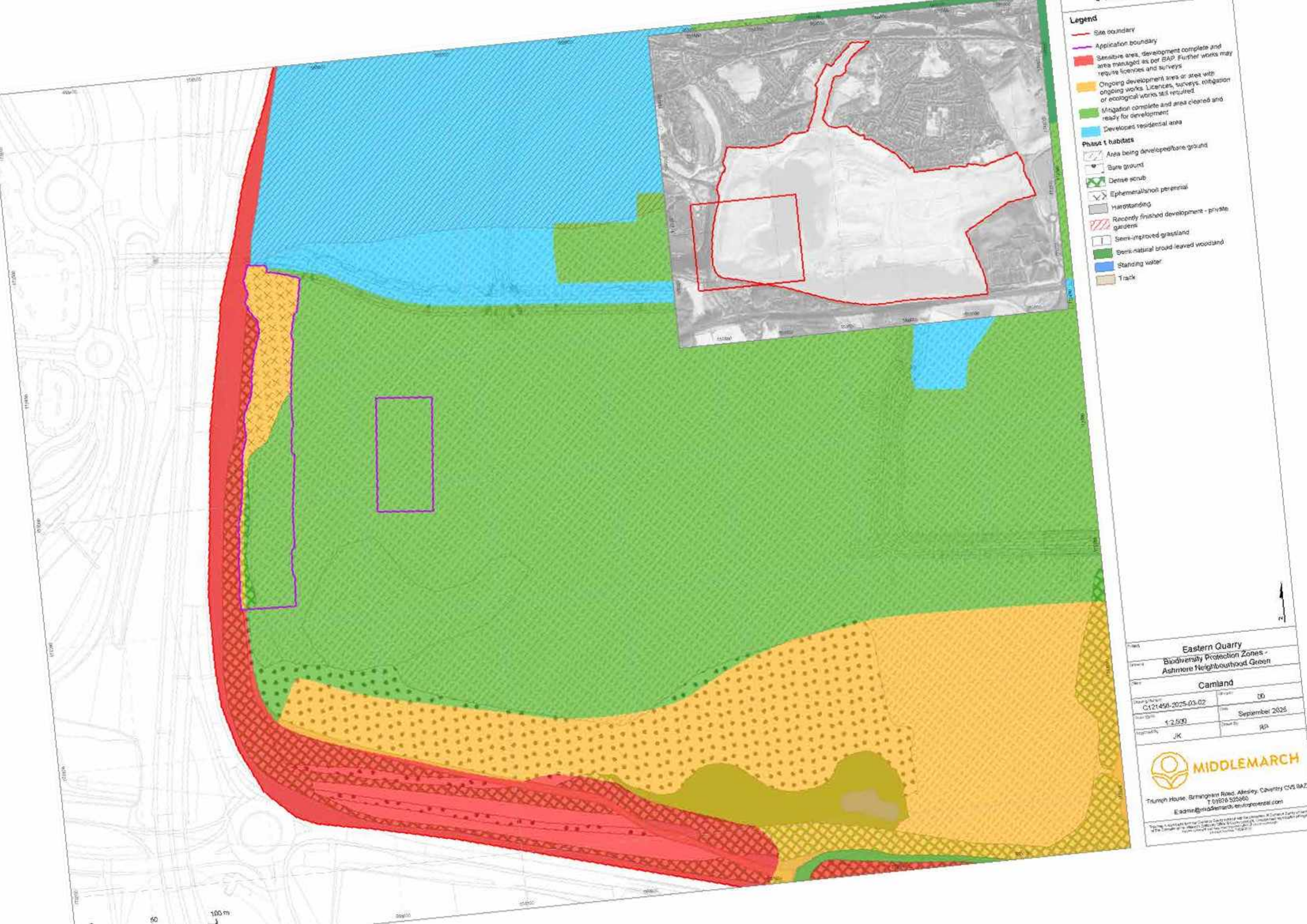
Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T: 01676 525880
E: admin@middlemarch-environmental.com


Legend
Site boundary
Application boundary
Sensitive area, development complete and area managed as per BAP. Further works may require licences and surveys
Ongoing development area or area with ongoing works. Licences, surveys, mitigation or ecological works still required
Mitigation complete and area cleared and ready for development
Developed residential area
Phase 1 habitats
Area being developed/bare ground
Bare ground
Dense scrub
Ephemeral/short perennial
Hardstanding
Recently finished development - private gardens
Semi-improved grassland
Semi-natural broad-leaved woodland
Standing water
Track
Eastern Quarry
Biodiversity Protection Zones - Ashmore Neighbourhood Green
Camland
C121458-2025-03-02
00
1:2,500
September 2025
JK
RA
MIDDLEMARCH
Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T: 01676 525880
E: admin@middlemarch-environmental.com
60
100 m

DRAINAGE STATEMENT

The Observatory
Southfleet Road
Ebbsfleet
Dartford
Kent
DA10 1EE

Job No:	B18075	**Date:**	23.09.25
Job Title:	Whitecliffe	**Engineer:**	RDT
Reference:	TN19 Ashmere P10 N'Hood Green Drainage Strategy	**Checked:**	DCT
Location:	Ebbsfleet, Kent	**Sheet No:**	1 of 1

Background:

This Technical Note has been produced to summarise the drainage strategy for the Neighbourhood Green serving Parcel 10 of the Ashmere Village at Whitecliffe (formerly Eastern Quarry), Ebbsfleet and to support a Reserved Matters Planning Application. It should be read in conjunction with the following documents: -

- Whitecliffe Water Management Plan
- Drawing No. B18075/153 P1 Whitecliffe Drainage Strategy Sheet 2
- Drawing No. B18075/305 P1 Ashmere P10 Neighbourhood Green – Proposed Drainage
- Report Ref 173535-04 Ashmere Phase 4 Drainage Technical Note
- Ashmere P10 MG Proposed SW - Surface water drainage calculations

Surface Water Drainage Strategy:

The drainage proposals have been developed to comply with the approved Water Management Plan, and the associated site wide drainage strategy (see drawing no. B18075-153).

It is proposed to drain the Neighbourhood Green via filter drains, linear drains and pipes to the strategic surface water drainage system serving the parcel.

The strategic network is comprised of sewers, swales, and lakes to convey surface water run off to a large attenuation lake, from where run off will be pumped to a new outfall into the river Thames at a rate controlled by a surface water pumping station. Strategic drainage of the parcel is described in more detail in the Ardent drainage technical note ref 173535-04.

Infiltration techniques are not suitable on the site due to the low permeability of the soil and the presence of an underlying principal aquifer.

The Neighbourhood Green will also accommodate an interim foul water pumping station, which is needed to avoid excessively deep strategic foul water sewers, thereby complying with Construction Design and Management Regulations to consider the safety of construction and maintenance personnel in the life of the facility.

The pumping station will be the subject of a 15m cordon sanitaire which will prevent habitable accommodation prevent development that would be adversely affected by smell. The pumps will be electric so noise will be kept to a minimum.

Flood Control

Sewers and swales have been sized such that there will be no flooding for a 1 in 30 year storm event, and any flooding occurring during a 1 in 100 year storm event plus a 20% allowance for climate change will be contained within carriageways below the top of kerb level and channelled away from properties towards the lakes or swales. The effects of an extreme storm event is covered further in the phase 4 drainage technical note. The roads and swales serving the wider development serve as a primary flood route for exceedance events.

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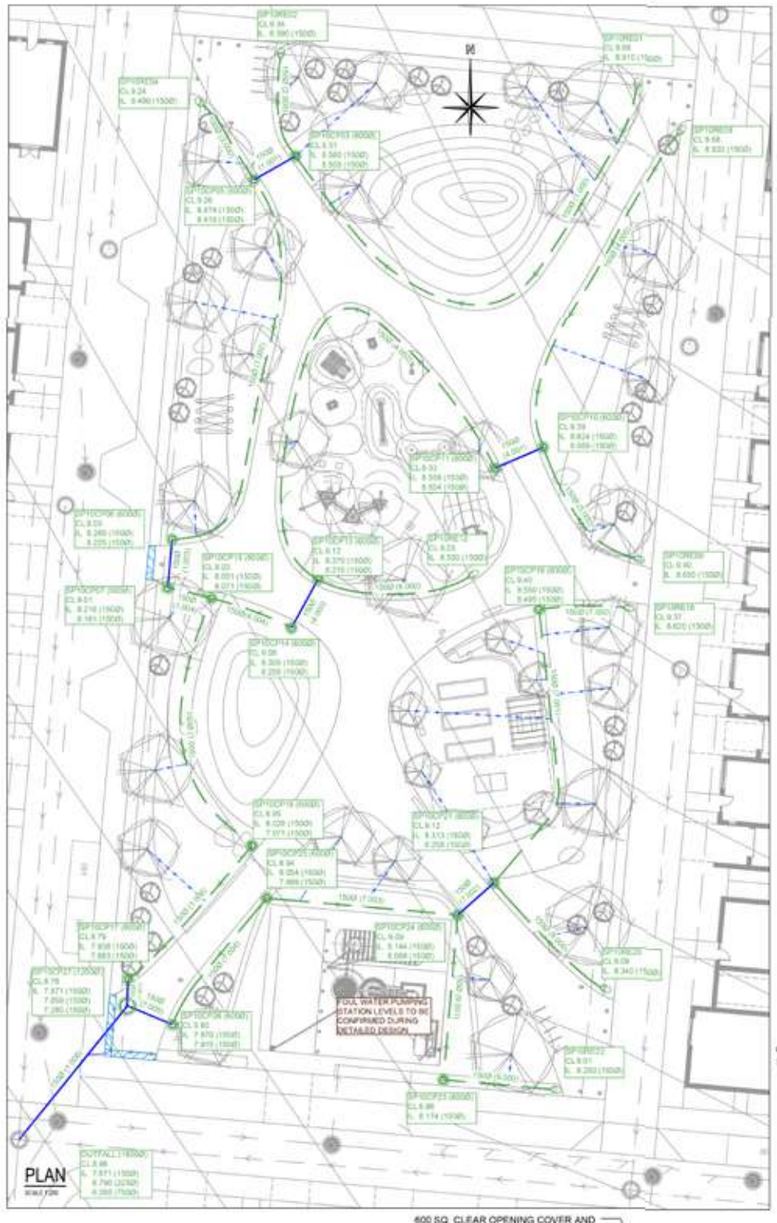
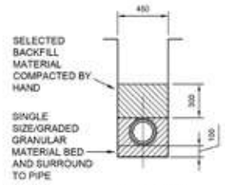
Water Quality:

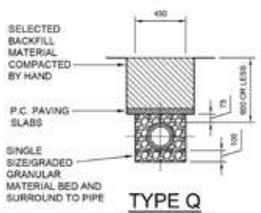
Surface water run-off from the neighbourhood green will be drained initially via filter drains which will provide the first part of a treatment train. The swales, both within the park and beyond, and lakes which form part of the strategic drainage network to which the green will eventually drain are also designed to act as part of the treatment train to ensure the surface water run-off from the development is treated to the standard required by the SUDS manual before being discharged to the River Thames.

In addition to the treatment provided by the swales and lakes, further treatment will be provided to run-off with the use of filter drains, and recirculation mains which will take water from the lakes and pump it to the top of the swales to provide additional treatment and a constant flow of water through the swales. The recirculation mains will also encourage flow across the lakes to avoid stagnation of standing water within the lakes.

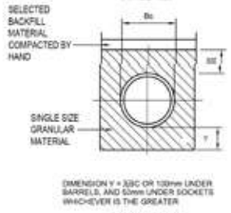




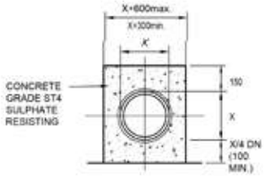
TYPE P BEDDING
SCALE 1:25


SELECTED BACKFILL MATERIAL COMPACTED BY HAND
P.C. PAVING SLABS
SINGLE SIZE/GRADED GRANULAR MATERIAL BED AND SURROUND TO PIPE

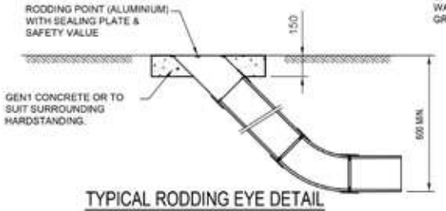
TYPE Q BEDDING
SCALE 1:25


SELECTED BACKFILL MATERIAL COMPACTED BY HAND
SINGLE SIZE GRANULAR MATERIAL
DIMENSION Y = 3/8C OR 100mm UNDER BARRELS, AND 50mm UNDER SOCKETS WHICHEVER IS THE GREATER

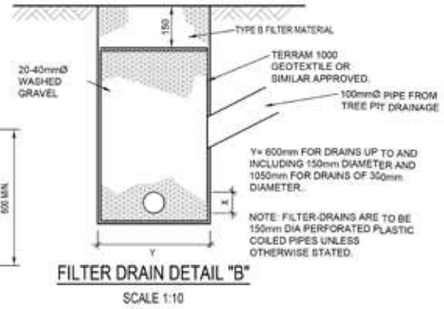
TYPE S BEDDING
SCALE 1:25



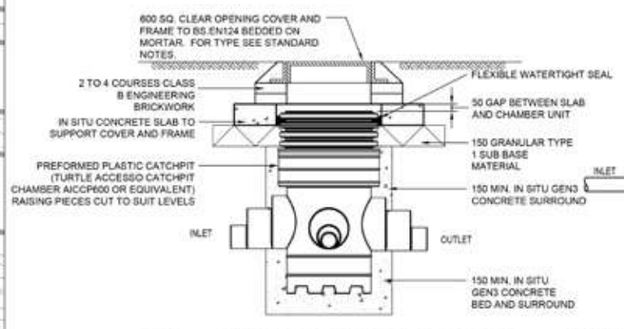
CLASS Z BEDDING
SCALE 1:25


RODDING POINT (ALUMINIUM) WITH SEALING PLATE & SAFETY VALUE
GEN1 CONCRETE OR TO SUIT SURROUNDING HARDSTANDING.
150
600 MIN.

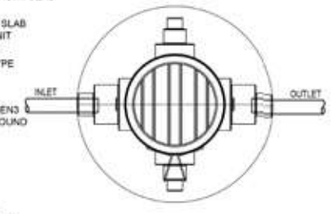
TYPICAL RODDING EYE DETAIL

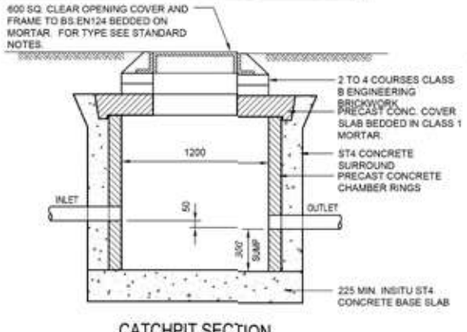

TYPE B FILTER MATERIAL
TERRAM 1000 GEOTEXTILE OR SIMILAR APPROVED.
20-40mmØ WASHED GRAVEL
100mmØ PIPE FROM TREE PIT DRAINAGE
Y= 600mm FOR DRAINS UP TO AND INCLUDING 150mm DIAMETER AND 1050mm FOR DRAINS OF 30mm DIAMETER..
NOTE: FILTER-DRAINS ARE TO BE 150mm DIA PERFORATED PLASTIC COILED PIPES UNLESS OTHERWISE STATED.

FILTER DRAIN DETAIL "B"
SCALE 1:10

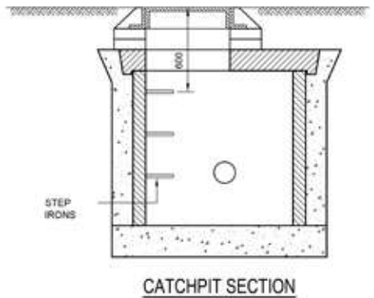

600 SQ. CLEAR OPENING COVER AND FRAME TO BS.EN124 BEDDED ON MORTAR. FOR TYPE SEE STANDARD NOTES.
2 TO 4 COURSES CLASS B ENGINEERING BRICKWORK
IN SITU CONCRETE SLAB TO SUPPORT COVER AND FRAME
PREFORMED PLASTIC CATCHPIT (TURTLE ACCESSO CATCHPIT CHAMBER AICCP600 OR EQUIVALENT) RAISING PIECES CUT TO SUIT LEVELS
FLEXIBLE WATERTIGHT SEAL
50 GAP BETWEEN SLAB AND CHAMBER UNIT
150 GRANULAR TYPE 1 SUB BASE MATERIAL
150 MIN. IN SITU GEN3 CONCRETE SURROUND
150 MIN. IN SITU GEN3 CONCRETE BED AND SURROUND
INLET
OUTLET

600mm DIAMETER CATCHPIT SECTION



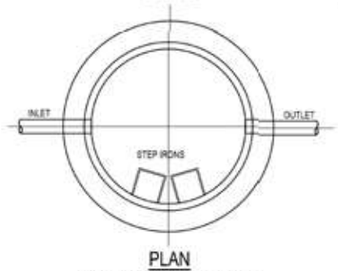

600 SQ. CLEAR OPENING COVER AND FRAME TO BS.EN124 BEDDED ON MORTAR. FOR TYPE SEE STANDARD NOTES.
2 TO 4 COURSES CLASS B ENGINEERING BRICKWORK
PRECAST CONC. COVER SLAB BEDDED IN CLASS 1 MORTAR.
ST4 CONCRETE SURROUND
PRECAST CONCRETE CHAMBER RINGS
1200
INLET
OUTLET
50
300
SUMP
225 MIN. INSITU ST4 CONCRETE BASE SLAB

CATCHPIT SECTION



CATCHPIT SECTION

600mm DIAMETER CATCHPIT PLAN
SCALE 1:20



PLAN
TYPICAL CATCHPIT DETAIL
SCALE 1:20

BEDDING NOTES

1. GRANULAR PIPE BEDDING MATERIAL FOR PIPES, AND BACKFILLING FOR TEMPORARY DRAINS (TRENCH SUB-DRAINS), SHALL CONSIST OF AGGREGATES FROM NATURAL SOURCES OR SINTERED PULVERIZED-FUEL ASH COMPLYING WITH THE RELEVANT PROVISIONS OF BS.882 AND BS.3797, PART 2 RESPECTIVELY, SIZED IN ACCORDANCE WITH THE FOLLOWING TABLE:

NOMINAL BORE OF PIPE (mm)	ALTERNATIVE AGGREGATE SIZES (mm)	
	SINGLE-SIZED	GRADED
100	10	-
150	10 OR 14	14 TO 5
225 - 300	10, 14 OR 20	14 TO 5 OR 20 TO 5
375 - 525	14 TO 20	14 TO 5 OR 20 TO 5
EXCEEDING	14, 20 OR 40	14 TO 5, 20 TO 5 OR 40 TO 5

2. SELECTED BACKFILL MATERIAL, WHETHER SELECTED FROM LOCALLY EXCAVATED MATERIAL OR IMPORTED, SHALL CONSIST OF UNIFORM, READILY COMPACTIBLE MATERIAL, FREE FROM VEGETABLE MATTER; BUILDING RUBBISH & FROZEN MATERIAL, OR MATERIALS SUSCEPTIBLE TO SPONTANEOUS COMBUSTION, & EXCLUDING CLAY OF LIQUID LIMIT GREATER THAN 80 AND/OR PLASTIC LIMIT GREATER THAN 55 AND MATERIALS OF EXCESSIVELY HIGH MOISTURE CONTENT. CLAY LUMPS AND STONES SHALL BE RETAINED ON 75mm AND 37.5mm SIEVES RESPECTIVELY.

3. COMPRESSIBLE FILLER FOR INTERRUPTING CONCRETE PROTECTION TO PIPELINES SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS.1142, PART 3 OR OTHER EQUALLY COMPRESSIBLE MATERIAL. THE THICKNESS OF COMPRESSIBLE FILLER SHALL BE AS FOLLOWS:

NOMINAL BORE OF PIPE (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
LESS THAN 450	18
450 - 1200	36
EXCEEDING 1200	54

4. THE CONTRACTOR IS TO PROTECT BURIED PIPES (PARTICULARLY SHALLOW PIPES) FROM DAMAGE CAUSED BY LOADS IMPOSED BY CONSTRUCTION PLANT.

5. BELOW ROADS AND OTHER PAVED AREAS TRENCHES SHALL BE BACKFILLED WITH DOT SPECIFICATION TYPE 1 SUB-BASE MATERIAL UP TO ROAD/PAVING FORMATION LEVEL. ALL OTHER TRENCHES,UNLESS OTHERWISE SPECIFIED SHALL BE BACKFILLED TO FINISHED GROUND LEVEL OR UNDERSIDE OF TOPSOIL LAYER WITH WELL COMPACTED EXCAVATED MATERIAL.

GRANULAR BEDDINGS

1. DIMENSION Y: 1/6 BC OR 100mm UNDER BARRELS, AND 50mm MIN. UNDER SOCKETS WHICHEVER IS THE GREATER (400 MAX.). ROCK ETC 1/4 BC AND 150mm MIN UNDER SOCKETS (400mm MAX.)
2. DN : NOMINAL BORE OF PIPE
3. BC : EXTERNAL DIAMETER OF PIPE BARREL

CONCRETE BEDDINGS

1. THE USE OF GRANULAR BEDDINGS BELOW CONCRETE BEDDINGS (BEDDING TYPES A2,B4,M) ARE FOR USE IN WET CONDITIONS.
2. CONCRETE CRADLES MAY EXTEND TO SIDES OF TRENCH.
3. TRANSVERSE STEEL TO BE 0.4% MIN OF CONCRETE AT X-X (Rf=0.4) UNLESS OTHERWISE STATED.
4. BEDDING BENEATH & AT SIDES OF PIPE TO BE WELL COMPACTED
5. BEDDING/BACKFILL DIRECTLY ABOVE PIPE TO BE LIGHTLY COMPACTED BY HAND.
6. DIMENSION Y: 1/6BC OR 100mm UNDER BARRELS, AND 50mm UNDER SOCKETS WHICHEVER IS GREATER (SUBJECT TO 400mm MAX.)
7. DN = NOMINAL BORE OF PIPE.
8. BC = EXTERNAL DIAMETER OF PIPE BARREL

TRENCH WIDTH

1. THE MAXIMUM TRENCH WIDTHS ARE TO BE AS SHOWN BELOW UNLESS THE APPROVAL OF THE ENGINEER IS OBTAINED.

INTERNAL PIPE DIAMETER	MAXIMUM TRENCH WIDTH
100	600
150	600
225	700
300	850
375	1050
450	1150
525	1200
600	1350
675	1450
750	1500
825	1600
900	1900
975	2000
1050	2100
1200	2300

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1.2 DO NOT SCALE FROM THIS DRAWING.

DRAINAGE NOTES:

1. THE CONTRACTOR IS TO CHECK ALL INFORMATION PROVIDED PRIOR TO COmmENCING WORKS, AND SEEK CLARIFICATION FROM THE ENGINEER IN RESPECT TO ANY AMBIGUITIES FOUND.
2. ALL COVERS WITHIN HARDSTANDING AREAS TO HAVE RECESSED COVERS TO ALLOW FOR SURFACING INFILL.
3. PIPE MATERIALS SHALL BE AS FOLLOWS:
   DIAMETER
   1000 - 2250 - CLASS 120 CLAYWARE TO BS EN 295
   NB. UPVC PIPES TO BS EN 1401-1 1996 MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER.
4. CLAY AND CONCRETE PIPES SHALL BE BEDDED ON CLASS S BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Z BEDDING. UPVC PIPES SHALL BE BEDDED ON CLASS P BEDDING UNLESS COVER IS LESS THAN 0.8m IN TRAFFICKED AREAS, THEN CLASS Q BEDDING.

KEY:

- PROPOSED S104 SURFACE WATER DRAINAGE
- PROPOSED S104 FOUL WATER DRAINAGE
- PROPOSED FILTER DRAIN TO DETAIL B
- LOCATION OF PROPOSED 100mmØ PLASTIC PIPE TO DRAIN TREE PITS
- PROPOSED STORM DRAIN MIN. 150mmØ UNLESS OTHERWISE STATED. RECYCLED SUB-BASE TO BE LAID ABOVE PIPE BEDDING TO UNDERSIDE OF FOOTPATH CONSTRUCTION
- PROPOSED RODDING EYE ACCESS REFER TYPICAL RODDING EYE DETAIL
- PROPOSED CATCHPIT, INVERT LEVELS REFER TO INCOMING PIPE AND OUTGOING PIPE WHERE DIAMETER DIFFERS
- PROPOSED TREE TO BE POSITIVELY DRAINED. OUTFALL FROM TREE PIT ASSUMED TO BE 750mm TO INVERT LEVEL.
- LINEAR DRAIN WITH SUMP OUTLET UNIT.

KEY PLAN
NOT TO SCALE

Rev.	Amendments	Date	By
P1	INITIAL ISSUE	23.09.25	RDT

Revisions

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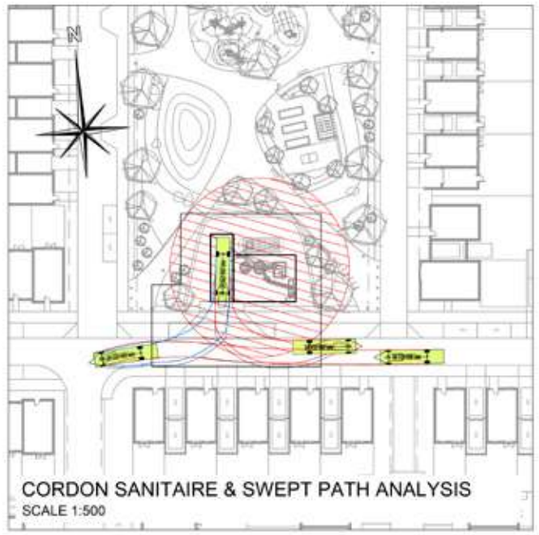
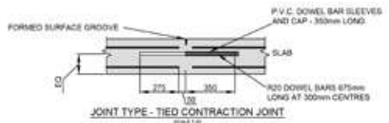
Client
EASTERN QUARRY LTD.

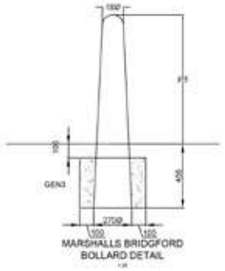
Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
INFRASTRUCTURE

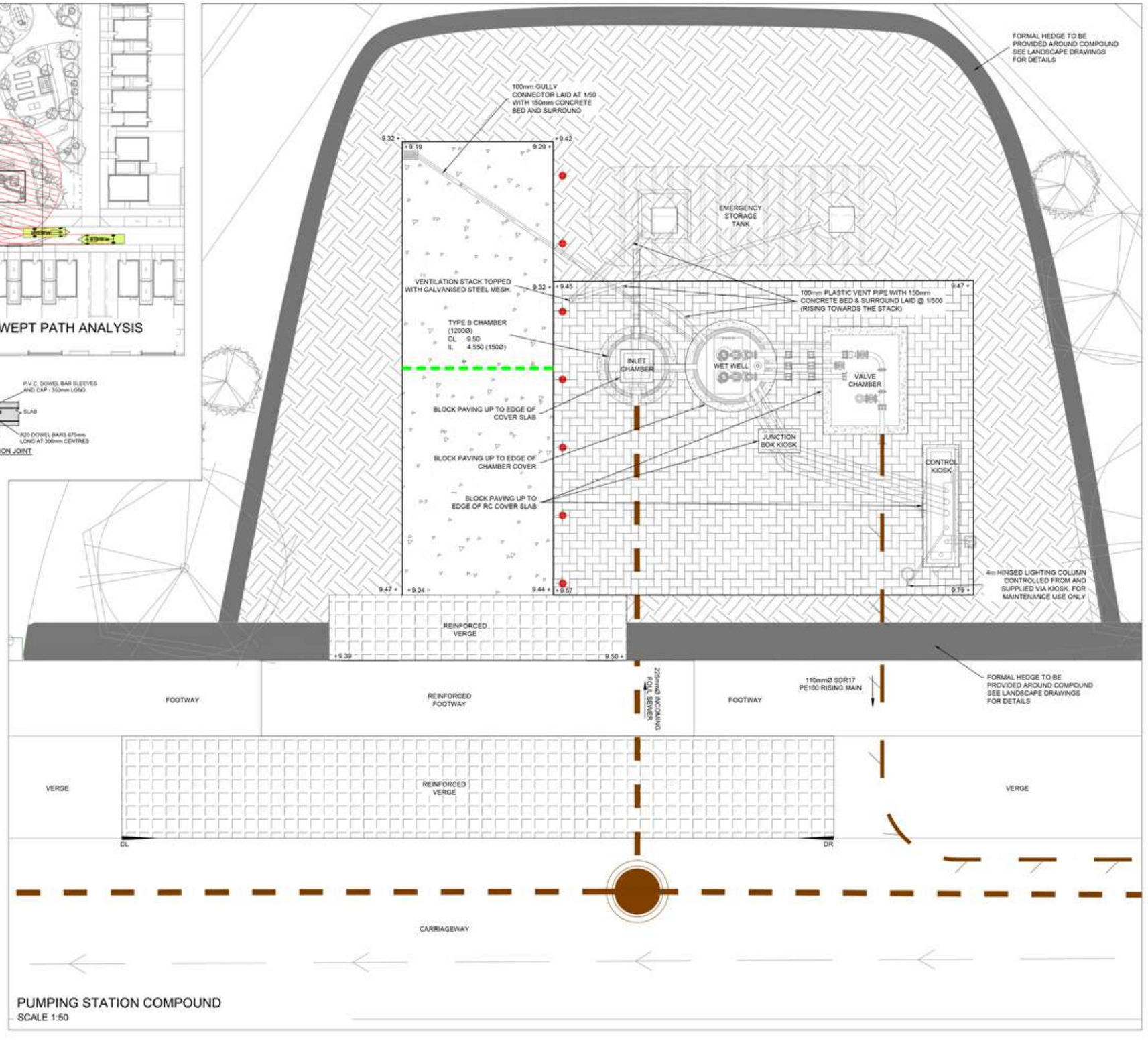
Drawing
ASHMERE PARCEL 10
NEIGHBOURHOOD GREEN
PROPOSED DRAINAGE

Scales 1:250 At original size A1
Drawn RDT Checked DCT
Date 23.09.25
Status PRELIMINARY
Drawing No. B18075/369 Rev. P1




FORMED SURFACE GROOVE
P.V.C. DOWEL BAR SLEEVES AND CAP - 350mm LONG
SLAB
R20 DOWEL BARS 675mm LONG AT 300mm CENTRES
JOINT TYPE - TIED CONTRACTION JOINT




FORMAL HEDGE TO BE PROVIDED AROUND COMPOUND SEE LANDSCAPE DRAWINGS FOR DETAILS
100mm GULLY CONNECTOR LAID AT 1/50 WITH 150mm CONCRETE BED AND SURROUND
EMERGENCY STORAGE TANK
VENTILATION STACK TOPPED WITH GALVANISED STEEL MESH.
100mm PLASTIC VENT PIPE WITH 150mm CONCRETE BED & SURROUND LAID @ 1/500 (RISING TOWARDS THE STACK)
TYPE B CHAMBER (1200Ø) CL 9.50 IL 4.550 (150Ø)
INLET CHAMBER
WET WELL
VALVE CHAMBER
JUNCTION BOX KIOSK
CONTROL KIOSK
BLOCK PAVING UP TO EDGE OF COVER SLAB
BLOCK PAVING UP TO EDGE OF CHAMBER COVER
BLOCK PAVING UP TO EDGE OF RC COVER SLAB
4m HINGED LIGHTING COLUMN CONTROLLED FROM AND SUPPLIED VIA KIOSK, FOR MAINTENANCE USE ONLY
REINFORCED VERGE
FOOTWAY
REINFORCED FOOTWAY
225mmØ INCOMING FOUL SEWER
110mmØ SDR17 PE100 RISING MAIN
FORMAL HEDGE TO BE PROVIDED AROUND COMPOUND SEE LANDSCAPE DRAWINGS FOR DETAILS
VERGE
CARRIAGEWAY
DL
DR
PUMPING STATION COMPOUND
SCALE 1:50

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1.3. LOCATIONS OF ALL EXISTING SERVICES ON-SITE TO BE CONFIRMED & PROVIDED TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORKS.

1.4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT CAMLAND CONSULTING LTD DRAWINGS & SPECIFICATIONS.

SWEPT PATH ANALYSIS NOTES

2.1 THE SWEPT PATH ANALYSIS HAS BEEN CARRIED OUT USING AUTODESK VEHICLE TRACKING 2025.

KEY

STRENGTHENED VERGE FOR MAINTENANCE ACCESS
CELLULAR CONCRETE BLOCKS INFILLED WITH SEEDED TOPSOIL
200mm TYPE 1 SUB BASE

BLOCK PAVING TO COMPOUND
80mm MARSHALLS KEYBLOCK PAVING PATTERN - HERRINGBONE.
COLOUR - NATURAL
30mm SAND
200mm TYPE 1 SUB BASE

RC SLAB
150mm THICK PAV2 RC SLAB WITH BRUSHED FINISH
1 LAYER A393 FABRIC WITH 50mm COVER FROM TOP. ON 1200 GAUGE POLYTHENE SLIP MEMBRANE WITH 300mm LAP. ON 150mm COMPACTED TYPE 1

SEEDED TOPSOIL
150mm THICK

RC SLAB CONTRACTION JOINT

HB2 KERB WITH 125mm UPSTAND

PCC FLUSH EDGING

915mm MARSHALLS BRIDGFORD BOLLARD (SEE DETAIL RIGHT)

10.300 + PROPOSED GROUND LEVEL

DL / DR PCC DROPPER KERB (LEFT / RIGHT HAND)

P1	INITIAL ISSUE.	23.09.25 RDT
Rev.	Amendments	Date By

Revisions

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Client
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Project
WHITECLIFFE
(FORMERLY EASTERN QUARRY)
INFRASTRUCTURE

Drawing
P10 NEIGHBOURHOOD GREEN PUMPING STATION COMPOUND AND CONRDON SANITAIRE

Scales 1:250 At original size A1

Drawn RDT Date 23.09.25 Checked DCT

Status PRELIMINARY

Drawing No. B18075/368 Rev. P1

AS11
AS10
AS18
AS17
ASVG
ASPS
PRIMARY SCHOOL
AS32
AS33
AS19
AS20
AS24
AS18
ASV2
ASV3
AS34
AS22
ASNG2
AS21
AS25
AS26
AS28
ASNG3
AS35
AS36
AS23
AS27
AS29
AS37
AS38
AS39
AS40
AS41
SOUTHERN LAKE
WATERING STREET
AL30
PATRICK PARSON
EASTERN QUARRY LTD
WHITECLIFFE
DRAINAGE STRATEGY
SHEET 3
PRELIMINARY

EBBSFLEET GARDEN CITY

WHITECLIFFE

© DEFINE

camland developments ltd

LEGEND

Reserved Matters Application Boundary

Proposed services; See engineers drawings for details and specifications.

Hard Landscape

Timber jetty with anti slip surface. To match Ashmere North Western Buffer to CTS drawings and specification.

Footpath surface material; Breedon gravel 'Wayfarer' or similar approved product.

Concrete block paving; Marshalls Modal Textured Sett Paving; 300x200x80mm laid stretcher bond; Colour: Light Granite, Mid-Grey Granite

Granite sett paving laid as flush banding through paving; 100x100x100mm laid in a grid; 5 rows; Colour: silver grey

Street Furniture & Play Equipment

B1 — Bailey Street Scene Greengate Seat with armrests and back; 1.8m long; Colour Corten; corten steel finish frame and FSC approved Iroko hardwood; or similar approved.

B2 — Bailey Street Scene Holgate Bench; no armrests and no back; 1.8m long; Colour Corten; corten steel finish frame and FSC approved Iroko hardwood; or similar approved.

B3 — Bailey Street Scene Greengate Picnic Set; 1.8m long; Colour Corten; Corten steel finish frame and FSC approved Iroko hardwood; or similar approved.

IB — Low level Illuminated bollard; Landmark 'Eye Wired Illuminated Timber Bollard'; FSC certified Oak; 150x150x900mm; Surfaced fixed; or similar approved.

LB — Bailey Street Scene; Ascot Litter Bin; powder coated in a corten colour finish; 1110mm high; 110L capacity. Laser cut lettering; Text to say 'General Waste'; or similar approved.

RB — Bailey Street Scene; Ascot Litter Bin; powder coated in a corten colour finish; 1110mm high; 110L capacity. Laser cut lettering; Text to say 'Mixed recycling'; or similar approved.

DB — Dog Waste Bin; Landmark 'Mettro 508 Dog Waste Bin'; Powder Coated Steel' Colour Corten; 1.8m height; or similar approved.

Bo — Bailey Street Scene Piramidal Bollard; bollard; H900mm; W100mm sq; Corten steel; or similar approved.

Area designated as the signage zone for Land Securities (10x10m). This is shown for context and will be subject to future, seperate planning application.

Boundaries

Timber knee rail; Jacksons Diamond shaped fencing 0.9m; 2700mm long railing 70x70mm; or similar approved.

Timber post and rail fence; or similar approved

Timber post and wire mesh fencing; cattle fence; with 2 runs of wire at the top of posts; to swales; or similar approved

Soft Landscape

Amenity Grass Seeding
Emorsgate EG22 - wear tollerant tuf grass mixture or similar. Planted at 25gm².

Meadow Seed Mix
Emorsgate EM6 Meadow Mixture for chalk and limestone soils. Planted at 4gm².

Grass matting safety surfacing
Safety surfacing to play area, safety mats in accordance with BSEN1177:2018 or similar approved product

Wetland Meadow Seeding
Wetland meadow area to swales; Suitable seed mixture for wetlands; Emorsgate EM8 Meadow mixture for wetlands. Planted at 4gm².

Pond Edge Seed Mix
To be oversown into proposed wetland meadow areas in selected locations. Emorsgate EP1 Basic general purpose wildflowers. Planted at 4gm².

Ground Cover Planting

Prunus laurocerasus	Achillea
Lavandula angustifolia	Leucanthemum vulgare
Genista lydia	Dryopteris affinis
Veronica albicans	Polygonum bistorta
	Geranium macrorrhizum
	Geranium x 'Johnsons Blue'

Native Hedge

Species	Height	Root	Density
Acer campastre	80-100cm	Transplants	5%
Alnus glutinosa	80-100cm	Transplants	5%
Corylus avellana	80-100cm	Transplants	5%
Crateagus monogyna	80-100cm	Transplants	55%
Ilex aquifolium	80-100cm	Transplants	5%
Malus sylvestris	80-100cm	Transplants	5%
Viburnum lantana	80-100cm	Transplants	5%
Prunus domestica	80-100cm	Transplants	5%
Prunus cerasifera	80-100cm	Transplants	5%
Prunus spinosa	80-100cm	Transplants	5%

Double staggered row, 300mm apart between plants and rows. Planted with spiral rabbit guards and timber post and wire fence.

Specimen Tree Planting

Code	Species	Girth	Height	Root	Clear Stem
CarB	Carpinus betulus	16-18cm	4-5m	RB	-
TilE	Tilia europaea	16-18cm	4-5m	RB	-
SalA	Salix alba	16-18cm	4-5m	RB	Multi-stem
QueR	Quercus robur	14-16cm	4-4.5m	RB	-
BetPe	Betula pendula	14-16cm	4-4.5m	RB	-
PruA	Prunus avium	12-14cm	3-4m	RB	Multi-stem
PopT	Populous tremula	12-14cm	3-4m	RB	-
AlnG	Alnus glutinosa	12-14cm	3-4m	RB	-
BetPu	Betula pubescens	8-10cm	2-3m	RB	Multi-stem
SorA	Sorbus aucuparia	8-10cm	2-3m	RB	-
SalCa	Salix caprea	8-10cm	2-3m	RB	-
SalCi	Salix cinerea	8-10cm	2-3m	RB	-
SorT	Sorbus torminalis	8-10cm	2-3m	RB	-

Specimen Shrub Planting

Species	Height	Size	Root
Crataegus monogyna	1-1.5m	15L	Container
Corylus avellana	1-1.5m	15L	Container
Euonymus europaeus	1-1.5m	15L	Container
Viburnum opulus	1-1.5m	15L	Container
Salix caprea	1-1.5m	15L	Container
Salix viminalis	1-1.5m	15L	Container
Salix nigra 'Betufolia'	1-1.5m	15L	Container
Sambucus nigra	1-1.5m	15L	Container
Viburnum lantana	1-1.5m	15L	Container
Ilex aquifolium	1-1.5m	15L	Container

Note: *Suitable trees/shrubs removed from elsewhere on Site to be translocated to the south west buffer and replanted under supervision from the Site ecologist.*

Specimen Fruit Trees

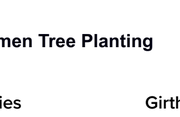
Code	Species	Girth	Height	Root	Clear Stem
MalD	Malus domestica sp.	8-10cm	2m+	RB	-
PruD	Prunus domestica sp.	8-10cm	2m+	RB	-
PyrC	Pryus communis sp.	8-10cm	2m+	RB	-

Note: *Fruit trees (particularly the apple trees) to be selected from a variety of edible fruiting species to aid cross pollination. Local varieties are preferred if available.*

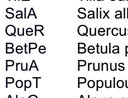
Play Equipment

Fish Rocker

Sailing Boat



Totter Beam



A — Drawing amended to reflect EDC/CSA comments — 08.12.25

Rev	Description	Date
	A	Rev
	DE_229_P10_004	Drg No
	Camland	Client
	Parcel 10 PH4 RM Landscape	Project
	South Western Buffer Landscape	Title
	1:500 @ A1	Scale

SCALE 1:500
1 5 25
0m 3 10

ECOLOGICAL ADVICE SERVICE

TO: ***Harry Bailey***

FROM: ***Helen Forster***

DATE: ***28 January 2026***

SUBJECT: ***Eastern Quarry, Swanscombe EDC/25/0183***

The following is provided by Kent County Council's Ecological Advice Service (KCC EAS) for Local Planning Authorities. It is independent, professional advice and is not a comment/position on the application from the county council. It is intended to advise the relevant planning officer(s) on the potential ecological impacts of the planning application and if sufficient/appropriate ecological information has been provided.

Any additional information, queries or comments on this advice that the applicant or other interested parties may have must be directed in every instance to the planning officer, who will seek input from the EAS where appropriate and necessary.

We have compare the proposed layout with the masterplan submitted as part of application EDC/17/0048 and we are satisfied that the proposal will not result in the loss of any open space/ecology areas agreed as part of the original application.

The information within the Landscape Design Statement and the South Western Buffer Landscape plan has confirmed that entirely native species will be used within the South Western Buffer. A mix of native and non native will be used within the Neighbourhood Green Landscape.

An ecology statement has been submitted within the Landscape Design Statement and it details that the site has potential to support reptiles, dormouse (and other small mammals) and breeding birds. The dormouse survey referred to in the Ecology Statement has now been submitted and it has confirmed that dormouse have been recorded throughout Eastern Quarry. However a plan has not been included within the report confirming the location of all the dormouse survey transects which were completed in 2025 and therefor it is not clear within this document if surveys covered the development footprint.

A Dormouse update has since been submitted and detailed that the survey covered the footprint of the proposed development. No evidence of dormouse was recorded during the

survey however during the site clearance works a dormouse nest with four juveniles was found.

The submitted information has confirmed works ceased and the works will be completed in May 2026 once the dormouse licence has been issued by Natural England.

No information of compensation planting has been provided as part of this application and therefore within this site there will be a loss of dormouse habitat. However we acknowledge that there are opportunities within the wider Eastern Quarry Site for suitable dormouse habitat to be created/enhanced and therefore we are satisfied that details of the replacement planting can be submitted as a condition of planning permission.

We advise that we are satisfied that a precautionary approach to avoid impacts to reptiles, breeding birds and small mammals (not dormouse) is appropriate.

If planning permission is granted we advise that details of compensation planting are submitted as a condition of planning permission.

We suggest the following:

Prior to any vegetation clearance commencing on site a compensation planting plan must be submitted to the LPA for written approval. It must provide details of where the planting will be implemented and how it will be managed. The plan must be implemented as approved.

If you have any queries regarding our comments, please do not hesitate to get in touch.

Helen Forster MCIEEM
Biodiversity Officer

This response was submitted following consideration of the following documents:

- Landscape Design Statement; Define; September 2025
- South Western Buffer Landscape; Define; No Date
- Neighbourhood Green Landscape; Define; No date
- Ecology Statement; Middlemarch; 17th September 2025
- Dormouse Monitoring 2025; Middlemarch; December 2025

ECOLOGICAL ADVICE SERVICE

TO: ***Harry Bailey***

FROM: ***Helen Forster***

DATE: ***20 March 2026***

SUBJECT: ***Eastern Quarry, Swanscombe EDC/25/0183***

The following is provided by Kent County Council's Ecological Advice Service (KCC EAS) for Local Planning Authorities. It is independent, professional advice and is not a comment/position on the application from the county council. It is intended to advise the relevant planning officer(s) on the potential ecological impacts of the planning application and if sufficient/appropriate ecological information has been provided.

Any additional information, queries or comments on this advice that the applicant or other interested parties may have must be directed in every instance to the planning officer, who will seek input from the EAS where appropriate and necessary.

We have compare the proposed layout with the masterplan submitted as part of application EDC/17/0048 and we are satisfied that the proposal will not result in the loss of any open space/ecology areas agreed as part of the original application.

The information within the Landscape Design Statement and the South Western Buffer Landscape plan has confirmed that entirely native species will be used within the South Western Buffer. A mix of native and non native will be used within the Neighbourhood Green Landscape.

An ecology statement has been submitted within the Landscape Design Statement and it details that the site has potential to support reptiles, dormouse (and other small mammals) and breeding birds. The dormouse survey referred to in the Ecology Statement has now been submitted and it has confirmed that dormouse have been recorded throughout Eastern Quarry. However a plan has not been included within the report confirming the location of all the dormouse survey transects which were completed in 2025 and therefore it is not clear within this document if surveys covered the development footprint.

A Dormouse update has since been submitted and detailed that the survey covered the footprint of the proposed development. No evidence of dormouse was recorded during the

survey however during the site clearance works a dormouse nest with four juveniles was found.

The submitted information has confirmed works ceased and the works will be completed in May 2026 once the dormouse licence has been issued by Natural England.

A Dormouse Compensation Plan has been provided and confirmed that habitat to support dormouse will be planted within the south west of the redline boundary for this application. No detailed information of the type of planting has been provided as part of this application however we understand that there will be a requirement for a landscaping plan to be submitted as a condition of planning permission.

We advise that the condition wording for the **landscaping condition** must required dormouse friend planting to be included within the area shown on plan *Specifications for mitigation and compensation – Ashmere* (Middlemarch; March 2026)

Other species
We advise that we are satisfied that the precautionary approach to avoid impacts to reptiles, breeding birds and small mammals (not dormouse) detailed in the ecology statement is appropriate.

If you have any queries regarding our comments, please do not hesitate to get in touch.

Helen Forster MCIEEM
Biodiversity Officer

This response was submitted following consideration of the following documents:

- Landscape Design Statement; Define; September 2025
- South Western Buffer Landscape; Define; No Date
- Neighbourhood Green Landscape; Define; No date
- Ecology Statement; Middlemarch; 17th September 2025
- Dormouse Monitoring 2025; Middlemarch; December 2025

ECOLOGICAL ADVICE SERVICE

TO: ***Harry Bailey***

FROM: ***Helen Forster***

DATE: ***19 January 2026***

SUBJECT: ***Eastern Quarry, Swanscombe EDC/25/0183***

The following is provided by Kent County Council's Ecological Advice Service (KCC EAS) for Local Planning Authorities. It is independent, professional advice and is not a comment/position on the application from the county council. It is intended to advise the relevant planning officer(s) on the potential ecological impacts of the planning application and if sufficient/appropriate ecological information has been provided.

Any additional information, queries or comments on this advice that the applicant or other interested parties may have must be directed in every instance to the planning officer, who will seek input from the EAS where appropriate and necessary.

We have compare the proposed layout with the masterplan submitted as part of application EDC/17/0048 and we are satisfied that the proposal will not result in the loss of any open space/ecology areas agreed as part of the original application.

The information within the Landscape Design Statement and the South Western Buffer Landscape plan has confirmed that entirely native species will be used within the South Western Buffer. A mix of native and non native will be used within the Neighbourhood Green Landscape.

An ecology statement has been submitted within the Landscape Design Statement and it details that the site has potential to support reptiles, dormouse (and other small mammals) and breeding birds. The dormouse survey referred to in the Ecology Statement has now been submitted and it has confirmed that dormouse have been recorded throughout Eastern Quarry. However a plan has not been included within the report confirming the location of all the dormouse survey transects which were completed in 2025.

No maps have been submitted confirming that dormouse have been recorded within the redline boundary of the proposed development. However due to the lack of a map showing where the surveys were carried out it is not clear if that is because a dormouse survey was not carried out within the development footprint or that dormouse were likely absent from

the site. The Ecology Statement does suggest that a survey was carried out within the development footprint therefore we presume that information confirming the results of the survey was an accidental omission from the report.

If dormouse are present there will be a need for details of compensation planting to be provided and this may result in changes being required to the proposed landscaping. The confirmed presence of dormouse to the north and south of the site mean that regardless of whether they were recorded or not a precautionary mitigation approach will still be required when clearing suitable dormouse habitat.

Prior to the determination of this application we advise that the results of the dormouse surveys for the development footprint are provided so it is understood if a dormouse licence is required to implement the works and if any additional planting is required as compensation.

If no dormouse were recorded and dormouse are currently considered likely absent from the site we advise that there will be a need for a precautionary mitigation strategy to be submitted as a condition of planning permission.

We advise that we are satisfied that a precautionary approach to avoid impacts to reptiles, breeding birds and small mammals (not dormouse) is appropriate.

If you have any queries regarding our comments, please do not hesitate to get in touch.

Helen Forster MCIEEM
Biodiversity Officer

This response was submitted following consideration of the following documents:

- Landscape Design Statement; Define; September 2025
- South Western Buffer Landscape; Define; No Date
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- Ecology Statement; Middlemarch; 17th September 2025
- Dormouse Monitoring 2025; Middlemarch; December 2025

Harry Bailey
Ebbsfleet Development Corporation
The Observatory
Castle Hill Drive
Castle Hill
Ebbsfleet
Kent
DA10 1EE

Flood and Water Management
Sessions House
County Hall
Maidstone, Kent
ME14 1XQ
Website: www.kent.gov.uk/flooding
Email: suds@kent.gov.uk
Tel: 03000 41 41 41
Our Ref: EBBS/2025/107493
Date: 16 January 2026

Application No: EDC/25/0183

Location: Ashmere Neighbourhood Green Ashmere Eastern Quarry Watling Street Swanscombe Kent

Proposal: Reserved matters application (relating to access, appearance, landscaping, layout and scale) pursuant to Condition 2 (details of Reserved Matters), Condition 25 (Reserved Matters Design Details), Condition 28 (Noise Report), and Condition 31 (Open Land) of outline planning permission reference EDC/17/0048 for the creation of a Neighbourhood Green (Ashmere Neighbourhood Green South West)

Thank you for your consultation on the above referenced planning application.

Kent County Council, as Lead Local Flood Authority, has reviewed the follow-up letter from Ardent Consulting Engineers (10/12/2025) and can confirm to the LPA that our previous comments are now considered addressed. We note from the additional sensitivity testing, using the current climate change allowance of 45%, that only small volumes of exceedance are generated within the modelling. It is acknowledged from Ardent's submission that these exceedances occur outside of Phase 4 and will be assessed as the subsequent phases come forward.

In view of this, we withdraw our objection and have no further comments to make on this Reserved Matters application.

This response has been provided using the best knowledge and information submitted as part of the planning application at the time of responding and is reliant on the accuracy of that information.

Yours faithfully,

Daniel Hoare
Senior Flood Risk Officer
Flood and Water Management

558500

173500

23

12

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Compartment 24:
Compensation under Licence Amendment: 2017-31542-EPS-MIT-6
- 238 m native hedge
- 6245 m² proposed woodland/scrub planting
- 5 dormouse boxes to be installed

Completion 2026/2027

0 25 50 m

Legend

- Site boundary
- Dormouse licence boundary
- Application/management compartment boundary
- High value dormouse habitat connectivity link
- Native hedgerow
- Ornamental hedgerow
- Species-rich hedgerow
- Retained partially vegetated cliff
- Watercourse
- Path
- Brash lines
- Parkland
- Willow dominated scrub
- Wildflower planting
- 100% wildflower seeding oversown into proposed meadow
- Woodland/scrub planting
- Ground cover planting
- Meadow seed mix
- Amenity grass planting
- Grass matting safety surfacing
- Play area planting (shrub planting)
- Wetland meadow planting
- Pond edge seed mix oversown into proposed wetland meadow
- Reed bed/swamp
- Dry river (calcareous seeding mix)
- Pool
- Retained woodland/scrub
- Retained meadow

N

Project	Eastern Quarry
Drawing	Specifications for Mitigation & Compensation - Ashmere
Client	Camland
Drawing Number	C121456-324-01
Revision	00
Scale @ A3	1:1,000
Date	March 2026
Approved By	JK
Drawn By	AW

MIDDLEMARCH
Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T:01676 525880
E:admin@middlemarch-environmental.com

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C121456-324-01

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Project	Eastern Quarry
Drawing	Specifications for Mitigation & Compensation - Ashmere
Client	Camland
Drawing Number	C121456-324-01
Revision	00
Scale @ A3	1:1,000
Date	January 2026
Approved By	JK
Drawn By	AW

MIDDLEMARCH
Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T:01676 525880
E:admin@middlemarch-environmental.com

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C121456-324-01